



THE
ORIENTAL NAVIGATOR;
OR,
NEW DIRECTIONS FOR SAILING
TO AND FROM THE
EAST INDIES.

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ORIGINAL MANUSCRIPT

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1911

James Sayer

1799



THE
ORIENTAL NAVIGATOR;
OR,
NEW DIRECTIONS FOR SAILING
TO AND FROM THE
EAST INDIES.

ALSO FOR THE USE OF THE

COUNTRY SHIPS, TRADING IN THE INDIAN AND CHINA SEAS;
TO NEW HOLLAND, &c. &c.

by Joseph Huddart, 1741-1816

Collected from the MANUSCRIPTS, JOURNALS, MEMOIRS, and OBSERVATIONS, of the most experienced
Officers in the Hon. EAST INDIA COMPANY'S SERVICE; and from the last Edition of the
FRENCH NEPTUNE ORIENTAL, by Monf. D'APRÈS DE MANNEVILLETTÉ.

BÈING

A Companion to the EAST INDIA PILOT, in two large Volumes of CHARTS and PLANS, originally published
by the late Mr. ROBERT SAYER;

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CONTENTS.

	Page.
GENERAL Remarks upon the prevailing Winds and Weather; by a late Commander in the service of the East India Company.....	1
Winds in high latitudes.....	17
Directions general and particular for sailing from England to the Cape of Good Hope.....	21
—— for sailing from the British Channel towards Porto Santo, Madeira, the Canaries, the Cape Verd Islands, and to the Equinoctial Line.....	25
—— for going to the Coast of Brazil, and for sailing from thence to the Cape of Good Hope—Isle of Fernand de Noronha—Portuguese Island of Ascension—Rio Janeiro—Isle of Trinidad—Isles of Tristan da Cunha—Gough's Island, &c.....	32
Extracts of Captain Gough's Journal, March 3d, 1732.....	41
—— Osterly's Journal, March 27th, 1758.....	43
The Cape of Good Hope—Directions for going into, and out of Table Bay.....	44
Description of False Bay, and directions for sailing into and out of Simon's or Seamon's Bay.....	47
The Cape and Bank of Agulhas or Lagullas—Instructions for ships bound outwards or homewards.....	51
Instructions for sailing round the Cape of Good Hope, towards India and China.....	53
Islands and Dangers to the Southward and to the Eastward of the Cape of Good Hope.....	55
Outward Passage—Directions for the passage to the Isles of St. Paul and Amsterdam.....	57
The Isles of St. Paul and Amsterdam.....	58
Directions for the Passage from the parallel of St. Paul and Amsterdam, or from those Islands to Java Head; and for the Passage of the Straits eastward of Java to China—Account of the prevailing Winds.....	62
Dangers to the Eastward and North-eastward of the Isles of St. Paul and Amsterdam—Cloates Island—The Danish Rock—Houtman's Abrolhos—The Tryal Rocks—Coco or Keeling's Islands, and Christmas Island.....	67
General Directions for the Course from the Cape of Good Hope to India by the Isle of France or Mauritius—Instructions for sailing into Diego Rais, or Isle Rodrigue, and into Mauritius.....	72
Inner Passage—Description of the Coast of Africa from Cape Lagullas to Cape Correntes—Struys Bay—Fleth Bay—Fish Bay—Moffel Bay—Algoa Bay, &c.....	78
The Coast, River, and Port of Natal—Coast of Fumos—Da Lagoa Bay—Cape Correntes, &c.	80
Description of the Coast between Cape Correntes and Mozambique—Cape St. Sebastian—Sofala—Ilhas Primeiras—Angoxa Islands—Mozambique, &c.....	84
Description of the Coast of Africa from Mozambique to the Equinoctial Line—Querimba Islands—Cape Delgado—Quiloa—Zanzibar—Mombasa—Bay Formosa—Patta, &c.....	88

	Page.
Directions for the Channel of Mozambique or the Inner Passage—Western Coast of Madagascar—Winds and Currents—Bassas de India—Europa Rocks, &c.....	92
Instructions for sailing into St. Augustin's Bay, and thence to the Comoro Islands—Chesterfield Shoal—St. Christopher's and John de Nova Islands.....	97
Remarks on a Shoal on which the Taunton Castle, James Urston, Commander, grounded in the Mozambique Channel.....	101
The Comoro Islands, and Directions for sailing into their Roads—Comoro—Mohilla—Mayotta—Johanna—Dangers to the Eastward and Westward of the Comoro Islands.....	104
Passage from the Comoro Islands to the Laccadive or Lake-divas, and the * Nine Degree and Ten Degree Channels—Islands and Shoals in the Passage.....	110
Of the Winds which prevail in the Eastern Seas.....	112
The Periodical Winds or Monsoons—The South-west Monsoon—The Currents.....	113
The North-east Monsoon.....	116
The Monsoons on the Coast of Coromandel, and other places of the Bay of Bengal—The South-west or West Monsoon—The Currents.....	117
The North-east or East Monsoon.....	119
The Monsoons, and shiftings of the Currents in the Bay of Bengal; by a Bengal Pilot.....	121
The South-west Monsoon in the Gulf of Siam, and in the China Seas.....	122
The Monsoons and Currents to the South of the Equator.....	123
The Land and Sea Breezes.....	124
Description of the Archipelago of Islands and Dangers which extend to the East and North-East of Madagascar, extracted chiefly from Mr. D'Après's instructions in the second edition of his Neptune Oriental.....	125
The Chagas Archipelago—Diego Rays Islands, &c.....	134
The Islands Adu and Candu—London's Bank, &c.....	140
Directions for the Passage to India, by the East of Madagascar, while the South-east Monsoon prevails in the Indies—Description of the Eastern Coast of Madagascar—Fort Dauphin—Foul Point—Antongil Bay, &c.....	142
Description of the Coast of Africa, from the Equinoctial Line to Cape Guardafui, and Isle of Socotra.....	147
Description of the Coast of Africa to the Westward of Cape Guardafui, and of the Coast of Arabia from Cape Aden to the Straits of Babel Mandel; from the French Neptune Oriental	150
The Red Sea or Gulf of Arabia—Instructions for coming into the Red Sea, and going to Moka, with a description of the African and Arabian Coasts.....	153
Directions for sailing from Cape Guardafui to Babel Mandel, and through the Straits; by Captain Norton Hutchinson of the Doddington, 1753.....	155
Extract of the Journal of the Latham, bound up the Red Sea to Jeddah in 1758.....	157
Directions for sailing from the Malabar side of India to the Red Sea—1° from Bombay or Surat, on the Northern part of the Coast.....	160
2° from Anjengo, Cochin, Calicut, &c. on the Southern part of the Coast.....	161

* It is called also the Eight Degree Channel; the best latitude to keep in when you go to through is from 7° 30' to 7° 45'.—N. B. In page 111 it is erroneously printed 8° 45', or 8° 50' North.

A 2

	Page.
Description of the Western Coast of Ceylon, from Manara to Point de Galle, or Gaul.....	233
Instructions for sailing between Point de Galle and Cape Comorin in each Monsoon.....	243
The Southern Coast of Ceylon, from Point de Galle to the Elephant and the Great Bassas....	244
The Great Bassas—Directions for sailing between Dondra Head and the Great Bassas—Bale of Cotton Rock.....	247
The Eastern Coast of Ceylon, from the Elephant or the Great Bassas to Trincomalee—The Little Bassas.....	250
Description of the Great Bay of Trincomalee, with sailing Instructions, &c. from M. Nichelson.....	254
Directions for sailing into Trincomalee Harbour when you come from the Northward.....	255
Marks for turning into Trincomalee Harbour.....	256
The Eastern Coast of Ceylon from Flag-staff Point to Point Pedro.....	258
Palk's Bay, or the Gulf between the North-west part of Ceylon and India; from the Dutch description.....	259
The Coast of Coromandel—Description of the Coast from Point Calymere to Pondicherry—Negapatam and Shoal—Karical—Tranquebar—Porto Novo, &c.....	261
Description of the Coast from Pondicherry to Madras—Allemparva—Sadras—Covelong—Madras.....	266
Passage from Trincomalee to Madras, or any other part of the Coast of Coromandel in the North-east Monsoon.....	269
Remarks made in a Passage from Madras to Trincomalee, in April 1762, to avoid the Little Monsoon; by M. Nichelson.....	270
Passage from the Coast of Coromandel to the Coast of Malabar.....	271
Instructions for making the Outer Passage from Madras to Bombay, in the South-west Monsoon, by M. Nichelson.....	ib.
Description of the Coast of Coromandel from Madras to the Northward—Pullycate and Shoal—Arimegon—Caliatour, &c.....	273
The Coast of Golconda—Masulipatam—Point Gordeware—Coringa Bay, &c.....	275
The Coast of Orissa—Vizagapatam—Bimilipatam—Chickacole—Ganjam—False Point, and Point Palmiras.....	281
Directions from Point Palmiras to the Roads of Ballasore and Pipley, or Pepley.....	286
Instructions for sailing, round the Reef off Point Palmiras, into Ballasore Road and over the Bar; by Jonathan Ranson, Pilot.....	288
Directions for sailing from the Coast of Coromandel to Bengal, at different seasons of the year..	290
Directions for sailing from Bengal to Madras, and the Coast of Coromandel.....	296
Directions from Bengal to the Malabar Coast, Bombay, Surat, &c.....	299
Instructions for sailing in the Northern part of the Bay of Bengal—Part I. Survey of the Coast from Point Palmiras to the Braces; of the outlets of the Ganges, and of the inter-jacent Rivers from Hughly River to Roymongul; by Captain Ritchie, Marine Surveyor to the East India Company.....	302
Part II. Directions for sailing from the Arracan Shore, along the Coast of Chittigong, or Chittagong, by Captain John Ritchie.....	314
Sailing Directions for the Coast of Chittagong, by M. Bartholomew Plaisted, Marine Surveyor to the East India Company.....	317
Instructions.....	

	Page.
Instructions for Chittagong River.....	321
Directions for crossing the Head of the Bay of Bengal ; by Captain Ritchie.....	323
The Tides in the Bay of Bengal.....	325
Tide Table for the Western part of the Bay of Bengal, and for the Hughly or Hoogly River.....	326
Remarks on the Bore ; by Major James Rennel, F. R. S.....	327
The Coasts of Arracan and Ava ; from Captain Ritchie.....	ib.
Instructions for the Channel between Diamond Island, and Alagadas (la Guarda) or the Drowned Isle ; and for sailing from Pagoda Point, along the Coasts of Pegu and Arracan, towards Bengal in the North-east Monsoon ; by Captain George Hayter.....	331
1° From Diamond Island to Cape Negrais.....	ib.
2° From Cape Negrais to the Calventuras.....	334
3° From the Calventuras to Foul Island.....	337
Remarks for the Straits of Cheduba ; by Captain Charles Newland.....	339
Directions for sailing from Pagoda Point to Ballafore Road, in the months of December and January.....	341
The Coast of Pegu (Pegoo) with the Coasts of Martaban and Tanasserim.....	342
The Andaman Islands—Preparis—The Cocos—Great and Little Andaman—Narcondam—Barren Island—Dangers near the Andaman ; extracted chiefly from Captain Ritchie's Account.....	343
The Nicobar Islands ; chiefly from Captain Ritchie.....	347
The Acheen Islands and their Passages ; with Directions for sailing from the Coast of Coromandel to Acheen.....	351
Remarks on the Bight of Cor-Angria to the Eastward of Acheen.....	355
Instructions for sailing from Madras to Pegu in the Little and Great Monsoon.....	356
General Directions for sailing to Mergui, when you leave the Coast of Coromandel from the beginning of August to the middle of September ; from Monf. D'Après.....	358
Directions for coming into and going out of King's Island Bay.....	360
Directions for sailing to and from Mergui—Junkselon, &c. by M. D'Après.....	362
The Straits of Malacca, or Malack—Poolo Pinang, or Prince of Wales's Island.....	365
Instructions for sailing into the Straits of Malacca, from the Westward in either Monsoon—Queda—Salangore, &c.....	366
Instructions for sailing from Dondra Head to Parcelar Hill in the Straits of Malacca ; by Captain Thorp.....	370
Directions for sailing from Madras to the Straits of Malacca ; by Captain Richard Rawlins.....	371
Directions for sailing along the Eastern Coast of Sumatra to Parcelar Hill—Poolo Varella—the Arroas—North and South Sands, &c.....	372
From Parcelar Hill to Cape Rachado and Malacca.....	377
Directions for returning from Malacca to the Coast of Coromandel, Bengal and other Western places, at different seasons of the year ; by Monf. D'Après.....	379
Directions for sailing through the Straits of Malacca, from Malacca to the Straits of Sincapour.....	381
Directions for sailing through the Straits of Sincapour, or the Governor's Straits.....	383
Instructions for sailing, in the South-west Monsoon, from the Nicobar Islands, through the Straits.....	

	Page.
Straits of Malacca and Sincapour; by Senhor Pedro de Nova, an experienced Portuguese Pilot, who carried the Camden through these Straits in June 1770.....	389
1° From Poolo Rondo to the Arroas along the Sumatra Shore.....	ib.
2° From the Arroas to Parcelar Hill.....	390
3° From Parcelar Point to Cape Rachado.....	392
4° From Cape Rachado to Malacca and Poolo Pisang.....	393
5° From Poolo Pisang through the Straits of Sincapour.....	394
Directions for sailing from within the Straits of Sincapour through the Straits of Dryon, along the Eastern Coast of Sumatra; by Captain John Hallet.....	395
The West Coast of Sumatra—Extract of the Somerset's journal, from the Cocos Islands to Bencoolen, along the West Coast of Sumatra; with some additional remarks.....	397
Instructions concerning Bencoolen Road, Poolo Bay, and Rat Island; by Captain Joseph Huddart.....	399
Directions for sailing from Bencoolen to the southward; by Captain Huddart.....	401
Directions for sailing to Bencoolen, and along the West Coast of Sumatra, coming from the Southward; by Captain George Richardson, 1771.....	402
Nautical Instructions for the West Coast of Sumatra, coming from the Southward; extracted chiefly from those of Commodore John Watfon, in the ship Revenge, 1770.....	403
1° From Flat Point to Bencoolen.....	ib.
2° From Bencoolen to Moco-moco—Indrapour—Padang.....	407
3° From Padang to Ayer-bongy.....	412
4° From Ayer-bongy to Nattal and Tappanooly.....	415
Instructions for the West Coast of Sumatra, coming from the Northward to Bencoolen; by Captain George Baker.....	418
The Principal Islands on the West Coast of Sumatra—Hog Island—Poolo Nyas—Poolo Mintaoon—Great Fortune Island—The Pogy or Nassau Islands—Enganno Island.....	423
The Straits of Sunda—Instructions for sailing through the Straits of Sunda; by Monf. D'Après, with several additions.....	426
Directions for sailing from the Straits of Sunda to the Straits of Banca; by Monf. D'Après....	431
Remarks on the Sumatra, or Zutphen Channel, in the Straits of Sunda.....	434
Directions for sailing, through the Straits of Sunda, to Bantam and Batavia, and thence to the Straits of Banca; by Monf. D'Après and Captain George Hayter.....	435
Instructions for sailing through the Straits of Banca; from M. D'Après.....	438
To avoid the Friderick-hendrick in coming from the Northward.....	445
Directions for sailing from the Straits of Banca to the Straits of Sunda.....	ib.
General Instructions for sailing through the Straits of Gaspar; by Captain Joseph Huddart, 1788.....	450
Remarks on Gaspar Straits by Captain Leftock Wilfon of the Carnatic, 1787.....	452
The China Sea—The Monsoons, Winds and Currents in the China Sea.....	454
Directions for sailing 1° from the Straits of Banca to Poolo Aore.....	457
2° From the Straits of Sincapour to Poolo Aore, Poolo Timon, &c.....	458
3° From the Straits of Sincapour towards the Gulf of Siam.....	460
Directions for sailing from Poolo Aore to Poolo Timon—The Anambas—Poolo Domar.....	461

Directions

	Page.
Directions for sailing from Poolo Timon to Poolo Condore.....	462
Directions for sailing from Poolo Condore to Poolo Sapata—Dangers about Poolo Sapata—Middleburg shoal, &c.....	465
Directions for sailing from Poolo Sapata to the Coast of China.....	467
Sailing Directions for the River of Tigris, or Canton River; by Captain Joseph Huddart, 1786.....	472
Directions for sailing to China, by the eastern part of the China Sea.....	475
Directions for sailing from Poolo Timon to Siam, in the Western Monsoon; by Monf. D'Après.....	479
Directions for returning from Siam to Poolo Timon, in the Eastern Monsoon.....	482
Directions for sailing, in the Western Monsoon, from Siam to China, to the Westward of the Paracel; by Monf. D'Après, with some additions.	
1° Along the Coast of Camboja—Islands off the Coast of Tfiompa.....	483
2° Along the Coasts of Tfiompa and Cochinchina.....	486
3° Along the Coast and in the Gulf of Tonkin.....	489
The Passage to China between the Isle of Hai-nan and the Paracel.....	492
Instructions for sailing from St. John's Island to Emouy or Amoy, with the description of the coast, &c. By Monf. D'Après.....	494
Instructions for sailing from the Great Ladrone Islands to Poolo Condore, through the Inner Passage, between the Paracel and the Coast of Cochinchina; by Captain Hayter.....	497
Directions for sailing back from China to India or Europe, through the Straits of Banca and Sunda; by M. D'Après.....	499
Instructions for ships bound to Manilla.....	502
Directions for sailing from Manilla to the Straits of Sincapour and Malacca; by Monf. D'Après.....	506
Enumeration of the shoals, &c. in the China Sea; by Alexander Dalrymple, Esq.....	507
Instructions for sailing from the Straits of Sincapour through the Straits of Balabak, and thence to Sooloo; by Captain Dodwell.....	512
Instructions for sailing from the Westward to China, round the North end of Borneo, between the Islands of Balabak and Banguay toward Sooloo; and out to the Main Ocean, among the Philippine Islands to the Northward of Mindanao, in the South-west Monsoon; by John Watfon of the Royal Captain, 1762.....	513
Instructions for the track to be followed from Poolo Aore to pass, across the Java Sea, to the Straits to the Eastward; by Monf. D'Après.....	516
Instructions for sailing from Batavia to the Straits of Macassar; translated from the Dutch, and communicated by Captain Parker.....	518
The Straits of Macassar.....	520
Considerations on the Passages to and from China, extracted from Mr. Dalrymple's Memoir, 1788.....	522
Instructions for sailing from the Straits of Saleyer, through Pitt's Straits, and the Eastern Passage to China—Pelew Islands; from Mr. Robertson's Memoir, 1791.....	530
Remarks on a Passage made in the ship Admiral Pocock, from Manilla to Poolo Laut, by the way of Sooloo, in the months of April, May and June.....	534

	Page.
The Valentine's Instructions, in 1761, for sailing from Goat Island near Luconia to Sooloo, and from thence, through the Straits of Macassar, to the Straits of Sapy.....	540
The Straits to the East of Java—Straits of Bally, Lombok, Alafs, Sapy, &c.....	543
Instructions for the return from the Indies to Europe, by Mons. D'Après.....	548
Remarks made in sailing from Bombay to the Cape of Good Hope, through the Inner Passage, or the Channel between Madagascar and the Coast of Africa; by Mr. Nichelson....	550
Instructions for sailing from the Cape of Good Hope to the Islands of St. Helena and Ascension.....	556
Instructions for sailing from the Island of Ascension to Europe—Poneto or St. Peter's Island—Cape Verd Islands—the Azores—Vigias or Dangers, &c.....	563

Appendix.

1797.

	Page.
O BSERVATIONS by Captain Thomas Butler of the Walpole, relative to his Passage from the Cape of Good-Hope to China, round New Holland, in 1794.....	573
Description of the Track of the Royal Admiral, Captain Henry Bond, in 1792 and 1793, from the Cape to Port Jackson and China, with an account of the Reef off the North West end of New Caledonia	576
New Discovered Islands	577
Connected situation of the Islands Tobacco Sima, and S. E. Extreme of Formosa	578
Account of a Shoal to the Southward of Madagascar, by Captain Bond	ib.
Explanatory Directions for the South Channel, from Prince of Wales's Island to Sea, by Captain Home Popham, with the Correspondence respecting the utility of that Survey	579—590

ERRATA.

Page. 42, line 27, instead of 30 deg. 20 min. east, read, 2 deg. 50 min. east.

Page. 97, line 3, add *Captain Hall* of the *Worcester*, instead of 44 deg. 13 min. east. longitude, places it in 43 deg. 20 min. east of London.

Page. 367, line 31, instead of *east*, read *west*.

Page. 564, last line but one, instead of 31 deg. 25 min. read, 27 deg. 1 min. 15 sec.

GENERAL REMARKS

UPON

PREVAILING WINDS AND WEATHER,

BY A LATE COMMANDER IN THE

SERVICE OF THE EAST INDIA COMPANY.

THE principal cause of winds is heat and cold; which expression being relative, depends upon the comparison: we say that matter is hot when it greatly exceeds the heat of other matter with which it is compared, and the latter we call cold, when compared with the former.

Therefore the sun, which is the fountain of heat, affords causes for variety of winds, which are so useful to the mariner, and so necessary for the preservation of health.

It would be needless here to enter into philosophical reasoning upon the effects produced by the action of the sun upon air; let it suffice to say, that heat rarefies the atmosphere, or common air, and renders it specifically lighter, and that cold condenses it. From common observations on the temperature of the air, which in high latitudes is so subject to continual changes, we must then expect to find great variety of winds and weather; and according to this difference of specific gravity in the atmosphere, is the strength of wind, or motion of the heavier air, rushing towards the lighter to restore the equilibrium. Warmth also increases evaporation, and renders the atmosphere capable of supporting a greater quantity of moisture than it will do in a cooler state; this is a powerful ingredient in the causes which produce the diversity of winds and weather, especially between the Tropic and sixty degrees of latitude in both hemispheres; for by this addition of moisture the air is also expanded, and is specifically lighter than it would be in the same degree of heat in a drier state.

ON TRADE WINDS.

THIS being premised, I shall begin with the sun's influence to rarefy the atmosphere between the Tropics. By his apparent diurnal motion from east to west continually rarefying the atmosphere on the meridian with that luminous body, it occasions the winds to blow from east to west (the heavier atmosphere following the lighter), and those from the Tropic of Capricorn to the Equator to incline from the southward, while the winds from the Equator to the Tropic of Cancer incline from the northward, in both hemispheres, proceeding towards the sun; in the same manner the south-east trade winds (for those constant winds are called *Trade Winds*) prevail further to the northward when the sun has a north declination, as from the month of June to the month of September. And, in the Atlantic Ocean, during those months, there are often several degrees between the south-east and north-east trade winds, in which space it often blows from the south-west quarter; but this south-west wind comes more properly under the denomination of a Monsoon, the cause of which is to be accounted for hereafter. From November to March the north-east trade wind prevails farther to the southward, and sometimes both winds almost meet each other, or leave little or no space between them; but this depends upon particular causes; for between the south-east and north-east trade winds, the weather is often variable; viz. calms, squalls, with thunder, lightning, and rain which sometimes falls in very heavy showers.

Was the atmosphere of one continued warmth and motion uniform, we should have no rain, for it would not take up any more moisture in exhalation than it could support; therefore in a steady Trade Wind, notwithstanding the great evaporation, we seldom have any rain; but from accidental causes, the Trade Winds blowing stronger and weaker by turns, frequently cloudy, sometimes slight showers prevail.

What we are saying of Trade Winds, is supposed to happen at a considerable distance from the land, or from the limits of such Trade Winds where other prevailing causes may take effect; for every where near the land, if the sun has great influence, it occasions land and sea breezes near the shores, and from the particular situation of the coasts, heavy gusts and gales of wind. The Trade Winds are more steady and uniform in the Pacific Ocean from its greater extent, and also in the Ethiopic; then in the Atlantic Ocean, where Cape Verd in Africa extends so much to the westward, and Brazil in America to the eastward: near these latter coasts we may with some degree of propriety call them Monsoons, as they prevail at the different seasons of the year from different quarters.

The large continents have also more influence than small islands, which, if they lie at a great distance from the main, operate very little upon the Trade Winds; if they are elevated they are subject to more rain than if they were low land: this is principally occasioned

sioned by the ascent given to the wind, or atmosphere, in rising over the tops of the hills, when being cooled it condenses into small drizzling rain, as I have observed at St. Helena and other islands; an effect peculiar also to all mountains, even in the middle of continents, when the atmosphere is sufficiently charged with moisture. The sun's rays heating the atmosphere according to its density, it is therefore much warmer at the bottom than at the top of hills. I have observed upon a mountain, which was sloping from the sea towards the top whose height was about 700 yards, a pleasant breeze in shore, and fine clear weather; the air in ascending (being condensed by cold) about half way up had the appearance of fog, or thin light flying clouds, but at the top it was a misting rain; this may frequently be seen in any mountainous country.

ON MONSOONS.

THERE is another kind of winds called Monsoons, on account of their being periodical, which blow one half of the year from one quarter, and the other half year from its opposite side. The cause of those winds arises from the situations of the lands, and prevail no where so steady as in the East Indies, north of the Equator, from the coast of Africa to Acheen Head in the island of Sumatra; they are also prevailing through the China seas, but not with that constancy.

The general range of the coasts of the continent, extending in an east and west direction, from Africa to the eastern side of China, is the principal cause of those winds; for the sun in the months of April, May, June, July, and August, being vertical over that continent, by its influence rarefies the atmosphere to the northward, and hence the heavier air, on the ocean to the southward of the land, proceeds to the northward to restore the equilibrium, which occasions the south-west winds in those months. The south part of Africa may be partly the cause of those winds inclining to the westward, being cooler than the ocean at this season, for water is not so soon affected with heat or cold as the land, but keeps nearer a mean state.

This atmosphere proceeding from the neighbourhood of the Equator, and being highly charged with moisture, soon begins to form into rain, though small and slight, till near the land; but in the months of June, July, and August, it falls in great quantities on the Malabar Coast (which it first meets), and those months are called there *the rainy season*. Two gentlemen at Bombay had each of them a machine for ascertaining the quantity of rain which falls in a given time: one of them told me that in 22 hours there fell $7\frac{1}{2}$ inches of rain in the month of July 1782; and upon further inquiry I found by those two machines, that the quantity of rain falling at Bombay in the south-west Monsoon, is more than double the quantity which falls in England during the whole year; though sometimes in this Monsoon it may be fair for several days together: the quantity of rain decreases in passing in land, and towards the Coromandel coast, and though

at Madras there may be frequent showery weather, yet during this Monsoon it is the best season for shipping to lay on the above coast; the south-west Monsoon prevails over the Bay of Bengal, and it is difficult for a ship to make her passage from thence to Madras, till the month of September.

In the months of November, December, January, February, and March, the north-east, or opposite Monsoon, prevails in those seas, for the sun having got to the southward, and rarefied that atmosphere, which in the other Monsoon was the more condensed, and the land to the northward being much cooler, and very cold on the Continent north of the Tropic of Cancer, it consequently condenses the air, and the winds prevail from the north-east, or in an opposite direction to the other Monsoon.

This is the fair weather Monsoon on the Malabar Coast, and on all other coasts in India, where it does not blow in shore, or some other causes interfere; for where there are prevailing winds from the sea, the atmosphere, in meeting the coast, will be subject to form into rain as was said before. Hence this is the worst season to lay on the Coromandel Coast, but though squally, there is not the quantity of rain falling that might be expected, and for two reasons: first, The wind from the Continent where it is cold, probably frost, must be in a dry state, and the short passage down the Bay of Bengal, scarcely affords time to evaporate a sufficient quantity to load the atmosphere to a great height with moisture; secondly, The atmosphere in proceeding to the southward is continually increasing in warmth, and therefore more capable of supporting its moisture, therefore it appears consistent with theory, that fair weather should prevail in this Monsoon.

On the Malabar Coast those months have a perpetual serene clear sky; at Bombay it would be remarkable to see it cloudy, or to have rain in January, February, and March; and though we had some rain one night in January 1782, the inhabitants remarked that several years had elapsed since they had seen rain at this season. For, as was said before, the north-east wind, which proceeds from cold, and over a large tract of continent, passes here so dry, and void of moisture, as to attract it in a surprising degree from all substances it meets with, and makes the best seasoned furniture to fly: this is not peculiar to Bombay, but happens every where on the continent of Asia, about the parallel of the Tropic of Cancer, from Africa to the eastern coast of China.

The navigation up and down the Malabar coast in the north-east Monsoon is the most pleasant that I ever experienced, having a serene weather, and in general pleasant land and sea breezes, which change regularly near the coast, without much interval of calm between them. But in the south-west Monsoon it is dangerous to come near this coast, except to fall in with a harbour, as the winds blow right in for the land (especially from Mount Dilly to the northward as far as Surat), seldom veering above a point or two; hence ships sailing from Bombay work out with the ebb (which sets stronger out of the harbour in this Monsoon, by reason of the heavy rains), and anchor in the flood; if they cannot hold or gain ground by working until they get a good offing, or the favor
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of a point or two in the wind, so as to enable them to gather an offing in stretching down the coast.

The Monsoons are not confined to India only, but the winds are thus influenced in many other parts of the world, especially where there are large continents, and the coasts are extending in an easterly and westerly direction in low latitudes, as near the coast of Guinea and Brazil, where, though the winds are not so fixed, the different seasons have great influence upon them.

There is also a north-west Monsoon, which prevails in the Indian ocean in the months of November, December, January, February, and March, and may be said to extend from the Coast of Africa to New Guinea, and its breadth in many parts between the 3d and 8th degrees of south latitude, and from 2° to 4° of north latitude; but this is a very unsettled Monsoon, with variety of weather and frequent calms, though it often blows strong, with heavy squalls, on the north-west coast of Sumatra.

It is by keeping in the tract of this Monsoon that ships sail to the eastward amongst the islands, and make what is called *the Eastern Passage to China* in this season, when the north-east Monsoon prevails in the China seas; and sometimes the French, bound from the island of Mauritius to India, make their easting in this Monsoon.

In the southern part of the tract of this north-west Monsoon, a south-east Monsoon, or opposite wind prevails at the contrary season of the year; viz. from the month of May to that of September: but this is seldom called a Monsoon, as it joins with the south-east trade wind, and becomes a continuation thereof, extending in those months from 4° to 2° of south latitude, or even sometimes north of the Equator; from which limits the south-west Monsoon already mentioned begins and continues to the coasts of India.

Those Monsoons in the Indian seas confine the south-east trade wind which extends between the coasts of Madagascar and New Holland, to much narrower limits than the south-east trade winds in either the Ethiopic or Pacific oceans; for during the months of November, December, January, February, and March, when the north-east and north-west Monsoons prevail as before mentioned, this south-east trade wind does not extend farther northward than the 12° or 10° of south latitude; it is also subject to heavy gales of wind, especially in the neighbourhood of the Island of Mauritius, and from thence to the coast of New Holland, in the aforesaid months.

The Monsoons do not change from one to the other at the same time throughout their whole extent, nor do they set in at the same seasons precisely at any particular place in different years, though in the latter case they are generally much nearer than the former; in both cases various causes may have effect: the principal in the first is, the situation of the coasts, and in the latter, the prevailing weather; but there is generally a month or two of unsettled weather about the change of the Monsoon, (near land, especially) subject to heavy gales of wind, which, though of short duration and often of small extent, are dangerous to shipping from the sudden shifts to some other quarter that makes.

makes the sea run cross, and wreck the vessels. The loss of masts is often the first consequence of these gales, and hence from lowering the centre of gravity the hull becomes so labourfome as to strain, and open her in such a degree that it is not in the power of the mariner to keep her free, or prevent her from foundering.

Those gales generally give warning some time before they happen, and are much the same in effect as the Tuffoons in the China seas, and Hurricanes in the West Indies; the appearances preceding them are much the same: a heavy greasy appearance in the atmosphere, the sun wading deep, or not to be seen, sometimes a cross sea, and frequently the wind from an unusual quarter, or unsettled. It sometimes happens that those gales in India fall out a month sooner than they are generally expected; if so it is probable there may be another before the setting in of the Monsoon, and therefore the mariner should be upon his guard when the appearances are threatening; but there seldom happens more than one heavy gale about the time of change, and sometimes several years elapse without a severe gale.

In the change between the south-west and north-east Monsoons those gales generally happen between the middle of October and the latter end of November, on both the Malabar and Coromandel coasts; and those between the north-east and south-west Monsoons in the month of April on the Coromandel coast, called the Petty Monsoon, as the gales have seldom been so violent; on the Malabar coast in the month of May they are immediately followed by the south-west Monsoon. On this (the Malabar coast) in the month of April the wind prevails much from the northward, which, with the current to the southward, renders it tedious for ships to work up the coast; in general about the middle, or latter end of this month, the clouds begin to make their appearance upon the land in the evening, and probably you have some lightning, thunder, and rain; but in May this is more constantly the case, and often the squalls gather heavy upon the land, and come off with hard gusts of a short duration, and a heavy rain; but in general is over by midnight; then light airs and calms most part of the day with clear weather. At other times north-west winds prevail with cloudy weather for several days together, but if it puts on the appearances preceding a gale already mentioned, the mariner may prepare for heavy weather, and though he may escape a gale, as it is often confined to a small extent, he will in general experience bad weather.

I shall give an account of the weather on the Malabar coast, from the 16th of April to the setting in of the south-west Monsoon, in the year 1782, which was very different from the general weather at this season above described, and therefore more fatal in its consequences. Previous to the 16th of April the wind had prevailed full as much as usual from the northward, with fine weather as before described, but from the 16th it gradually lost its pleasant appearance. At Bombay the *Revenge* and *Royal Admiral* were under orders to proceed down the coast. On the 19th the *Revenge*, Captain Hardy (an able seaman and his ship the first in the marine of Bombay) sailed for Anjengo; the *Royal Admiral*,

Admiral, on the 20th A. M. for Tellicherry, the weather looking bad, the wind southerly and increasing with a heavy sky. After working the ebb, the *Royal Admiral* anchored at low water, between Kenery and Old Woman's Island: at 4 P. M. the wind increasing with a heavy sea, the *Revenge* stretched in to the northward of Kenery, was seen from the *Royal Admiral*, close reefed her topsails, wore ship and stood out to sea; at 7 P. M. the *Royal Admiral* drove, but at 9 anchored in the Outer Road of Bombay harbour, and rode out the gale. On the 21st April at 9 A. M. the wind at S. E. blowing a tremendous gale which continued till about 4 P. M. with rain, from thence decreasing till 8 P. M. altering its direction gradually to about S. S. W. when we had a fine night and clear sky.

The *Cuddalore* sloop of war sailed from Bombay to join the squadron at Madras, with two north country built brigs, transports loaded with grain, about the 16th.—The commander of the *Nancy*, one of the transports, told me, that having been working till the 20th off the Island of Kenery, against southerly winds, without gaining ground, he resolved with *Fletcher* the commander of the other transport to speak the commodore, and advise him to bear up for Bombay; but before this could be done it was too late to gain the harbour before night, therefore it was put off. He says that on the 21st about 10 A. M. the gale was very heavy from the south-east quarter, with a cross sea. *Fletcher* was not in sight, but he saw the *Cuddalore* to leeward apparently in distress; his masts were standing, but some of his sails were loose and flying in ribbands; he then bore down to him, but could not come near enough to speak him; the gentlemen (for the *Cuddalore* had several officers on board passengers for Madras) waving their hats, and the sea making a free passage over her: he brought too to leeward of the *Cuddalore*, but soon after he lost two of his men, who were washed from the pumps; this accident drawing his whole attention to his own ship, prevented him from looking for the *Cuddalore* for a short time, and when he did, he saw nothing of her. The *Cuddalore* being deep waisted was probably near foundering when the *Nancy* passed her; the *Nancy* lost her masts, had her gunwales tore up, which they covered with canvas, and by great exertion at the pumps preserved the ship and the remainder of their lives; she was the only one of the four mentioned near the island of Kenery which did not founder. A part of the mainmast of the *Revenge*, which had been carried away a little above the deck, was found and brought to Bombay, and by some particular mark known by the builder. The *Essex*, company's ship, Captain *Strover*, was also on this part of the coast, but further out to sea; she lost all her masts, and though a new ship had worked much; nor did I hear of one vessel at sea between Choul and St. John's Point, which was not either dismasted or foundered.

At Tellicherry the wind was also from the southward, but the strongest of the gale was felt two days sooner than at Bombay, and not near so heavy; the ships rode it out. The *Neptune*, with a stream which she happened to be moored with, and the southern anchor.

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At Surat the gale was heavy, but twelve hours later than at Bombay; strongest from the north-east quarter, and shifted to the north-west; a great havock amongst the shipping was the consequence. This gale ranging up the coast from the southward, occasioned the sea to overflow the low lands about Surat, and in the Gulf of Cambay, which drowned great numbers of the inhabitants, cattle, &c.

A ship under Portuguese colours arrived at Bombay the evening of the 20th, the day before the gale, and had only been five days from Anjengo—a passage so quick had never been performed at this season of the year, which further proves that the gale had commenced to the southward; and we may also infer that it did not prevail far from the coast, for the *Effex* had been working several weeks from Tellicherry, and must have arrived at least as soon as the Portuguese ship at Bombay, had she found those winds; but being at some distance from the coast (probably not more than 20 leagues), she was left short and suffered in the gale.

On the 22d, the day after the gale, the sea was fallen at Bombay, and the weather was as fine as if no gale had happened, which continued with a remarkable smooth sea on the Malabar coast till the 15th of May. I landed in my boat at Calicut in the beginning of May, and had no more surf than in the river Thames, and not the least swell for many days, to prevent the jolly boat from landing, which is a circumstance I never saw on this coast before.

During the siege of Tellicherry in Hyder Ally's war, the Bombay cruisers were sometimes kept there till about the middle of May: in such case it had been customary to run down the coast, and proceed to the southward of the Equator into the limits of the south-east Monsoon, and in it take their westing, and proceed to Bombay with the south-west Monsoon, but in the seasons of 1780 and 1781 they had made their passage up the coast in the month of May, by perseverance in carrying sail through the land squalls, (which, as before mentioned, generally come off at night), and had accomplished it much sooner. But in this season (1782) we had not any of those squalls from the land, or south-eastward, to give us the least assistance up the coast; it therefore appears that the former gale from the southward had so changed the atmosphere as not to produce the usual effect. On the 16th of May the weather began to put on its threatening appearance, with squally weather from the northward; the *Neptune* and *Royal Admiral* off Mangalore, bound to Bombay, could gain no ground: the weather growing every day worse, those ships were separated in the night, between the 18th and 19th, in heavy squalls from the north-westward. On the 20th of May, A. M. thick weather, the Monsoon set in with a heavy gale from S. W. by W. to W. N. W. the ships had about 20 leagues offing, the *Neptune* cut away her topmasts, and let go her bowers in deep water, which she soon parted; however, having a good drift, and the gale abating about 9 A. M. on the 21st of May the *Neptune* fell in with Pigeon Island, and anchored to leeward of it; the *Royal Admiral* anchored near Mangalore about the same time.

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This gale was furious at its onset, and continued with great violence, at first with a cross sea from the northward, but the high sea occasioned by the gale from south-west by west, which was steady to that point, soon made the former disappear, and though it was mountains high, according to the seaman's expression, by running fair it did not injure the ships so much as a cross sea. This sea ran so hollow that the *Royal Admiral*, though only drawing about 17 feet water, dipped the cap of her bowsprit, after anchoring off Mangalore.

On the 23d of May the Monsoon drew round to south-west by south, which enabled the ships to get off the coast and arrive at Bombay the 28th. In this gale all the ships on that part of the coast about Mount Dilly, and forty leagues north and south of it, except those two, were lost. The season being late, I believe there were few; I only recollect hearing of the loss of the Ordinance ships at Calicut, and of a Portuguese ship about Mount Dilly.

Two transports left Calicut at the same time with the *Neptune* and *Royal Admiral*, but finding they could not gain ground, they stretched off the coast with the north-west winds till they were in about 8° north latitude, and considerably to the westward of the meridian of Bombay: they took the advantage of the wind as it drew round to the westward and southward, and escaping this gale, arrived at Bombay on the 26th, two days before the *Neptune* and *Royal Admiral*, though the latter ships sailed much faster.

I would therefore, in the month of May, prefer stretching off from the coast, to the northward or southward of the Lakdivas, in making a passage up to Bombay, to either of the other passages, viz. Running to the southward and crossing the Line; or working close in shore, and taking the advantage of those squalls in which you are so liable to split your sails, and receive great injury by wear and tear.

Between the gale of the 21st of April and the middle of May, as well as in the squally weather from the middle of May to the 20th of the same month (or the setting in of the south-west Monsoon), we found none of those customary squalls from the land in this season: I think I may infer it is owing to the gale of the 21st April, which had lightened the atmosphere about the southern part of the peninsula. This gale, as was said before, commencing to the southward, and extending to St. John's, without much deviation in its direction; in the Gulf of Cambay the gale veered, from which I must conclude that the most light and rarefied atmosphere was not much to the northward of that Gulf, being probably to the southward at the commencement, and proceeding to the northward during the gale, which lengthened its duration; for at this season the sun is vertical at Tellicherry. This shift of the atmosphere from the southward, had so restored the balance on this coast, that there were no more south-east winds in the interval of time to the south-west Monsoon.

I shall only give the history of another remarkable gale on the coast of Coromandel, in
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what is called the *Petty Monsoon*, which generally happens in the month of April, and which was not the case in the year 1787.

On the 12th of May, 1787, I made the island of Ceylon, bound to Madras; had pleasant weather, with light variable breezes till the 16th, on which day it became rather squally. On the 17th and 18th the weather put on a heavy appearance, with variable winds and slight squalls. On the 18th P. M. a fresh breeze at north-north-east, and the sea began to rise from the east-north-eastward. Stretched to the north-westward, and saw Pondicherry at sunset. From this till midnight heavy squalls, variable all round; split one of our topmasts in clewing down; but now the wind fixing to the westward, we took this opportunity to get off the coast, and determined not to proceed for Madras Roads till the weather appeared more settled. On the 19th May, at noon, having got about 20 leagues from the coast, secured the ship for a gale, and brought to under a balanced mizen. The sea now running very high from east-north-east, and striking the ship with great violence, wind from the westward. At 6 P. M. a violent gust from the north-north-eastward; I cannot call it a gale, for it was soon over; I did not note the time, but think it was not an hour that it continued so heavy, afterwards dying away, and a heavy rain, till 9 P. M. when it sprung up at south-west, and increased to a heavy gale. About midnight the sea began to rise high and run quick from south-south-east, the ship still continuing to lay to under a balanced mizen, head north-westward, lay pretty easy, except the sea striking her hard against the counter. On the 20th May, about noon it cleared a little, the heavy atmosphere moving over us from west-north-west, though the wind was still at south-west, decreasing a little; at 1 P. M. set our courses, and at 4 P. M. the topmasts; at 8 P. M. seasonable, though a cross sea from south-south-east, and the wind at west-north-west. Stretched to the southward till 6 A. M. on the 21st May, when I stood in shore and made Pullicat, having had a strong current to the northward during the south-west gale. On the 22d anchored in Madras Roads; found several vessels had been drove on shore in the gale, and the *Walpole* laying by her last anchor: a very confused sea tumbling into the Roads.

Some days after this letters were received at Madras giving an account of heavy gales, and of an inundation at Coringa, which had destroyed many of the inhabitants, &c.

On reading some of those letters, I requested copies of two of them, in which the circumstances were minutely described; and I hope the gentlemen who communicated them to me, will excuse the liberty I have taken of inserting them here at full length.

‘ DEAR SIR,

INGERAM, 24th May, 1787.

‘ BEFORE my leaving Ellore (about a month ago) I wrote to you respecting a removal to Ganjam, which letter I hope you received. I write to you now to let you know the particulars of a very heavy gale and inundation of the sea, which have done great mischief in this neighbourhood.

‘ A north-east wind began to blow here on the evening of the 17th, and increased very much

‘ much on the 18th and 19th. On the 20th at 7 A. M. it became so violent as to
 ‘ blow down trees and unroof the houses, at the same time raining very hard. At ten the
 ‘ sea came up from Coringa so very rapidly, that in less than five minutes it was im-
 ‘ possible to go from one house to another; the wind blew very hard from the north-east,
 ‘ till between one and two o’clock, when it became due east, without abating in the
 ‘ smallest degree; it continued in this quarter for an hour and a half, bringing the sea
 ‘ upon us in very large waves; at nearly 3 P. M. it lessened for about ten minutes, and in
 ‘ a moment blew as hard from the south as it had done from the north-east and east,
 ‘ which saved the lives of the few who are spared; one hour more from the east would
 ‘ have swept every thing away.

‘ Jaggernaickporam is destroyed, but fortunately only one or two lives lost. Doctor
 ‘ Roxburgh and his family escaped to Samulcottah during or immediately after the gale.
 ‘ Coringa is totally ruined; out of four thousand inhabitants, about one hundred only are
 ‘ alive; Mrs. Corfar, Mrs. Dawson, and Lieutenant Green, are of that number; they have
 ‘ not saved a single article of their property.

‘ The villages about this place have suffered greatly, and a very small proportion of
 ‘ the inhabitants are in life.

‘ Dutchwarrum and Bandermaalanky are considerably injured; the former is seven
 ‘ miles to the southward of this, and the latter fourteen.

‘ It is computed there that ten thousand inhabitants have lost their lives. The houses at
 ‘ Samulcottah, Rajamundrum, and Madepollam are unroofed. No Europeans have been
 ‘ lost here. I was very near drowned in attempting to get to the factory house, which
 ‘ was only one hundred yards from the one I was in; all my efforts were in vain: after
 ‘ being very much exhausted by struggling with the waves and wind, I was obliged to
 ‘ be content with the shelter of an house smaller than the one I had left, and not ten yards
 ‘ from the one I aimed at reaching; short as the distance is, I found it impracticable. Mr.
 ‘ Firth landed at Coringa on the storm beginning, and was washed away with the house he
 ‘ had taken shelter under.

‘ I remain, Dear Sir,

‘ Yours sincerely,

‘ HEN. BUCHAN.’

INGRAM, 7th June, 1787.

‘ MY DEAR FRIEND,

‘ You wish to have a just and circumstantial account of the
 ‘ late calamity we have sustained; it is no wonder the accounts you have seen should be in-
 ‘ coherent and imperfect, for while the misfortune was so recent, our minds were distracted
 ‘ with a thousand fears and apprehensions for the consequences; indeed people less alarmed
 ‘ and less gloomy than ourselves, might have admitted the apprehension of pestilence and
 ‘ famine; the former from the air being tainted with some thousands of putrid carcases,

both of men and cattle, and the latter from the country around us being destroyed, as well as our stock of provisions and the fruits of the earth.

From the 17th May it blew hard from the north-east, but as bad weather is unusual at such a season, we did not apprehend that it would become more serious; but on the 19th at night it increased to a hard gale, and on the 20th in the morning it blew a perfect hurricane, inasmuch that our houses were presently untiled, our doors and windows beat in, and the railing and part of the wall of our inclosures blown down. A little before 11 A. M. it came with violence from the sea, and I presently perceived a multitude of the inhabitants crowding towards my house, crying out that the sea was coming in upon us. I cast my eyes in that direction, and saw it approaching with great rapidity, bearing much the same appearance as the Bore in Bengal river. As my house was situated very low, I did not hesitate to abandon it, directing my steps towards the Old Factory, in order to avail myself of the Terrace; for in that dreadful moment, I could not so far reflect upon causes or effects as to account for the phenomenon, or to set bounds to its increase. I had indeed heard of a tradition among the natives, that about a century ago the sea ran as high as the tallest Palmira trees, which I have ever disregarded as fabulous, till the present unusual appearance called it more forcibly to my mind. In my way to the Old Factory, I stopped at the door of Mrs. Boure's house, to apprise the rest of the gentlemen of their danger, and the measures I had concerted for my safety; they accordingly joined me, but before we attained the place of our destination we were nearly intercepted by the torrent of water. As the house is built on a high spot, and pretty well elevated from the ground, the water never ran above a foot on the first floor, so we had no occasion to have recourse to the Terrace. Between one and two o'clock the water began to subside a little, and continued gradually decreasing till the body of it had retired, leaving all the low places, tanks, and wells, full of salt water. I think the sea must have risen fifteen feet above its natural level; about the time of the water subsiding, the wind favoured it by coming round to the southward, from which point it blew the hardest. As the Factory House was in a very ruinous state, and shook exceedingly at every gust, we were very anxious to get back to Mrs. Boure's house. I attempted it twice, but found I had neither power nor strength to combat the force of the wind, getting back with the greatest difficulty to my former station. About 5 P. M. during a short lull we happily effected our remove. It blew very hard the greatest part of the night; at midnight it veered to the westward, and was so cold that I thought we should have perished as we reclined in our chairs. The gale broke up towards the morning. I shall not attempt to describe to you the scene that presented itself to our view when daylight appeared; it was dreary and horrid beyond description: the trees were all blighted by the salt water, the face of the country covered with salt, and yet it had more the appearance of having suffered by a blast of hot wind, or by the eruptions of a volcano, than by an inundation of water, such an effect had it in destroying

the herbage and foliage of every description. Our houses were found full of the inhabitants who had taken refuge therein, stripped of doors and windows, and quite open to the weather at top; the godowns mostly carried away, and several substantial tiled houses so completely levelled, as scarcely to afford a mark of their ever existing; but our sufferings were light when compared with those of Coringa, and the rest of the villages near the sea. At Coringa, out of four thousand inhabitants, it is said not more than twenty were saved, and those mostly on Mrs. Corfar's terrace, and on the beams of Captain Webster's house.

Mr. Gideon Firth, Mr. George Day, and the Portuguese Padre were, I believe, the only Europeans that were drowned. At first the sea rose gradually, and as it came in with the tide, the people were not much alarmed; but when they found it still increase so as to render their situation dangerous, they mounted on the top of their wagan houses, till the sea, impelled by a strong easterly wind, rushed in upon them most furiously, when all the houses at the same awful moment gave way, and nearly four thousand souls were launched into eternity. This tremendous scene was visible from Mrs. Corfar's terrace, over which the sea sometimes broke; and they were frequently in great danger, from the drifting of vessels and other heavy bodies, which must inevitably have brought down the house had they come in contact. At the Dutch village of Jaggernaikporam, I hear the distress was very great, and that about a thousand lives were lost; many of the villages in the low country, between Coringa and Jaggernaikporam, were totally destroyed, and the inundation carried its dreadful effects as far to the northward as Apparah; but I do not hear that many lives were lost at that place. The inundation penetrated inland about ten cosses from the sea in a direct line, but did little more damage to the westward of us than destroying the vegetation. It would be very difficult to ascertain with any precision the number of lives lost in this dreadful visitation; the most intelligent people I have conferred with on the subject, state the loss at from ten to twenty thousand souls: this is rather an indefinite computation; but I think, if the medium be taken, it will then rather exceed than fall short of the real loss; they compute that a lack of cattle were drowned, and from the vast numbers I saw dead at Nellapella, I can easily credit their assertion. For two or three days after the calamity, such was the languor of the inhabitants, that not a cooley or a workman was to be procured at any price; it required our utmost exertion to get the dead bodies and the dead cattle buried with all possible speed, to prevent the air being impregnated with putrid effluvia. This, to be sure, was a task we could not fully execute, except just within the villages. However no bad effects have ensued, which I impute to the continual land winds that have blown strongly for some time past; these have the property of drying up the juices of the said bodies, and preventing putrefaction, which must necessarily have been the consequence in a damp air. It is extraordinary that the vast tract of low ground on the south side of Guadavery, from Gotendy to Bundarmalanka, suffered very little from the inundation;

and

‘ and scarcely a person perished. This country lies so exceedingly low as to be flooded in
 ‘ many places by the common spring tides, and a great deal of it is in consequence
 ‘ covered with a salt jungle. It is probable they owe their safety to those small islands at
 ‘ the mouth of the Guadavery, as well as Point Guardawar itself, which must have both
 ‘ contributed to break the force of the sea.

‘ When we had recovered from our consternation on the 21st, we began to consider
 ‘ how we should be able to exist in such a field of desolation; as our wells were filled
 ‘ with salt water, our provisions destroyed, and we found, by digging in different places,
 ‘ no sweet water was to be procured; when it was discovered that Providence had so far
 ‘ interfered in our favour as to bring down the freshes at a very early and unusual season.
 ‘ From what accounts we could hastily gather, we were apprehensive that the stores of
 ‘ rice were either much damaged, or totally destroyed, as the Rice Godowns and Gomahs
 ‘ are generally ill-secured against an accident less formidable than this. However the
 ‘ event has happily falsified our surmises and proved our information fallacious; for rice has
 ‘ hitherto been plenty, and not dear. The generous supplies that have been sent us from
 ‘ the Presidency, will, I trust, secure us from serious want. Our markets have not yet been
 ‘ attended by a single person with an article for sale, but this is not much to be wondered
 ‘ at, as our supplies were generally furnished by the villages at no great distance in land, and
 ‘ those countries have been drenched sufficiently in salt water to destroy their produce.
 ‘ The fishermen, a most useful body of people, inhabiting chiefly by the sea side, have
 ‘ been almost totally extirpated, and we are thereby deprived of a very material part of our
 ‘ subsistence; time alone can restore us to the comforts we have lost, and we have reason to
 ‘ be thankful that things have not turned out so bad as we apprehended. I have tired myself
 ‘ in attempting this narration, and I fear I have almost tired you in the perusal of it. A
 ‘ great deal more might be said upon the subject, and much more expressed in fewer words,
 ‘ but I have not the talent of writing concisely, nor of dressing a dull subject in a flowery
 ‘ garb. If it is well received by my friend, my end is fully answered. The greatest part
 ‘ of this intelligence you have already had in detail, but it is your desire I should bring
 ‘ it to one point of view. It is hastily written, and very inaccurate, but you will re-
 ‘ member I was in a good deal of pain at the time of writing it, from an inflammation in my
 ‘ leg, so had not sufficient ease or leisure to correct or transcribe it.

‘ Yours affectionally,

‘ WILLIAM PARSON.’

In comparing the above accounts with what I experienced off Pondicherry, about 80
 leagues to the south-westward from Coringa, I am inclined to conjecture that I happened
 to be near the situation of the lightest atmosphere from the 17th to the 19th of May, as I
 had the winds variable till the setting in of the south-west gale; I think also that there
 might

might be two causes, or heavier parts of the atmosphere, as the principal foundation, one about Arracan, and the other between Sumatra and Ceylon, with a light atmosphere between: that during the north-east gale in the bay, or from the coast of Arracan, it was continually condensing the atmosphere about Pondicherry, which was the limits of that gale; and this lightest atmosphere, being also backed by a denser to the southward, would change its situation (as it became charged in that part) to the northward and to the eastward of my situation, or towards the middle of the bay, when at 9 P. M. on the 19th, the south-west gale began with me. At midnight I found a heavy cross sea from the south-east quarter, which leaves not a doubt with me of a strong gale from that quarter, and at no great distance, as this sea far exceeded any sea from the direction I had the wind, which only tended to cross the other. The south-east gale then proceeding north-westward, towards the lightest atmosphere, to restore the equilibrium; about 9 or 10 A. M. on the 20th, I met the north-east gale (which had been blowing some days for the same purpose) about the parallel of Coringa, when both joining in their effect, they took a direction between the two, *viz.* to the westward; from which the united currents and accumulated waters were forced particularly upon that part of the coast, and produced this almost incredible rise of the sea. It is also reasonable to conclude that the southerly wind would prevail, as the north-east wind, from its strength and duration, must have been exhausted, or have rarefied the air in that quarter from whence it proceeded; that it was also at a season when the south-west Monsoon prevails, the sun being vertical considerably to the northward of Coringa.

The strongest gale I have known in a steady direction upon a coast, does not raise the sea above three feet. Where there is a strong tide up a channel or gulf, and the gale commences at low water in the direction of the flood tide, I have known it to rise four or five feet higher; and if this gale drops at or about high water, it will ebb out near two feet lower at low water, than if there had been no gale. This I have frequently observed, and it arises from the forced accumulation produced by the wind at high water, which gives the ebb a greater strength, and makes it continue till it is below its common level.

I was informed at Madras, that on the 20th of May the tide was about two feet above what is commonly known: Mr. Parson mentions fifteen feet at Ingeram, and some accounts from Coringa to Madras, talk of eighteen or twenty feet; but as Coringa is near the sea, the waves might have deceived them.

It is also reasonable to suppose that it would not have so much effect to the southward of Point Guardawar, as the land there trenches much to the westward.

If I have been more particular than may be thought necessary in describing those gales, my intention was to shew that the mariner is not to depend upon any particular description, so much as to expect the same in every gale that happens in those seas, between the opposite Monsoons: they are as variable in their effects as the gales in our climate, with this difference, that their duration is generally of less continuance on account of the quick changes and short distances of the different specific gravities of the atmosphere, that produce

produce them. For instance, if from clouds, or any other cause, the sun's rays are prevented from heating or rarefying the atmosphere in a certain part, and that west forty leagues upon the land the atmosphere be clear, they would heat and rarefy this the more, and render it lighter. A person situated centrally between this denser and rarer medium, would find the wind east and blowing from the first to the latter, with force respectively proportional to the difference of specific gravity: such a gale probably would not last an hour, as we are not to suppose that the air passes the whole distance; it is even probable that no part of the first air passes over one-third of this space; for one particle of air puts another in motion, and those between will of course be forced forward; which being once impelled, by the laws of bodies in motion, must proceed till the second or lighter part of the atmosphere is more condensed than the first; and the observer will find the wind return from the opposite point; but this return is generally the strongest at the onset, or soon after, and dies away by degrees. If the observer is placed in an angular position, *viz.* south-west from the first, and south-east from the latter of those mediums, and that the surrounding air is nearly of mean density between the two; he would then find the wind from a different direction, *viz.* from north-east, or from the first, for the heavier air will proceed in every direction towards the lighter, but with the greatest velocity to where it is lightest of all: and when this part is overcharged, he will find the return, not in the opposite direction, but from the north-west, or from the situation of the latter medium.

However at the same time of the year similar causes may prevail, and generally the hardest of the November gales on the Coromandel coast are from the eastward. They begin in the north-west quarter, or far enough to the northward for ships to get out to sea from Madras Roads, which is certainly advisable for safety; and after blowing hard from the north-eastward, they fly round to south-east, and terminate at south-west; but this is not always the case, as before mentioned; for off Negapatnam, after the taking of this town in November, 1781, we had the first gales with squally weather from the north-east quarter for several days; yet the heavy gale came from the south-westward, and after which the weather was moderate for some time.

During the interval between those changes of the Monsoons, the sun is nearly vertical, and from the proximity of land, often occasions very suddenly those great differences of specific gravity, which are the cause of this unsettled state of the weather. But when the sun has got so far north, or south, as to render the cause general, and of sufficient efficacy, the Monsoon sets in steady, and those gales seldom happen. The equinoctial gales in our climate may be said to partake of the same causes in a less degree (being situated between the tropical heats and intense cold in a middle latitude), though the sun's distance from the zenith diminishes his power, yet we often have heavy gales, and bad weather for a considerable length of time together.

The gales of wind in the China seas, commonly called *Tiffoons*, are not confined to any particular season, but frequently happen, even in the height of both Monsoons. They
are

are met with throughout the China seas, and a long way to the eastward of the Philippine Islands, and are often very severe; it arises from the proximity of the islands to the southward and eastward, which often counteracts the principal cause of the Monsoons. The bad weather puts on the same appearances as before mentioned, and gives warning to the mariner, who must be upon his guard; therefore, as I have said already, though the Monsoons prevail in those seas, and change at the same season, they are not so steady as in the Indian seas.

WINDS IN HIGH LATITUDES.

FROM the latitude of 30° to the Pole, in both the northern and southern hemispheres, the winds are variable, but more prevailing from the westward, or west-south-west in the northern, and from the west-north-west in the southern latitudes; those winds often extend to the tropic, and sometimes under the 20th degree of latitude.

In the higher regions of the atmosphere, the clouds, which shew the direction of the wind, may often be seen to move contrary, or opposite to the wind; this I have often observed in a fresh trade wind, for the sun's great power between the tropics rarefying the atmosphere under his meridian (as mentioned in the former part of this chapter), it has not so much influence in the upper regions, where the atmosphere is light; hence the winds, or the motion of the upper part of the atmosphere, take a contrary direction to the trade wind, in order to maintain an equilibrium, and as this upper part of the atmosphere approaches the higher latitudes (the sun having less influence), it descends to the surface of the earth, and becomes more prevailing than from any other quarter; this I conceive to be the general cause of westerly winds prevailing in high latitudes, inclining to the southward in the northern hemisphere, and to the northward in the southern hemisphere, contrary to the direction of the respective trade winds.

There is generally an interval of calm between the trade winds and the opposite winds in high latitudes; for it could not be expected that the wind, in a contrary direction to the trade wind, should immediately prevail; yet if the trade wind, in proceeding towards the higher latitudes, hang much to the eastward, it may draw gradually round; and ships often pass from the trade into the variable winds, in high latitudes, without any interval of calm.

Notwithstanding the general cause just mentioned of westerly winds in high latitudes, accidental causes will occasion frequent variations; for the westerly winds generally inclining to blow from the tropical or warmer regions, as in north latitudes from the west-south-westward, as said before, and being replete with moisture from the great exhalation between the Tropics, as this moist atmosphere approaches the cold and higher latitudes, it is consequently condensed into showers of rain, hail, or snow, which render the sun's influence, in high latitudes, the more uncertain, especially between those from 40° to 60° , for beyond

the Arctic and Antarctic Circles, it being a fixed frost, or cold, it is not so subject to sudden shifts and heavy gales at any season of the year.

Suppose then a situation in the Atlantic ocean in the 50° north latitude, with the Torrid Zone to the southward, and the Frigid Zone to the northward, the wind from the south-westward will prevail till the atmosphere become condensed heavier than in the lower latitudes; then the wind flies round (generally strongest at the onset, or soon after) from the colder climates, and blows till an equilibrium is restored, when a calm often prevails for a few hours.

We may, therefore, from the above causes, expect in general (after a northerly, or north-westerly gale decreasing to a calm) a southerly wind, which springs up faintly at first, and keeps increasing in strength till the atmosphere is charged with moisture, and begins to rain; if it blows hard, and the rain begins to fall heavy, we may soon expect the wind to fly round to the west, north-west, or northward, and often to blow hard, which makes a cross, confused, and dangerous sea, for which the mariner ought to be upon his guard, and prepared to resist it. The first of this gale is generally the strongest, and may produce rain for a short time, but it will soon bring a dry cold air, which sometimes draws round into the north-east quarter, and there fixes for several days, but often dies away in a calm; hence follows the southerly wind. If the wind, after the shift from the southward, keeps much to the westward, it may continue longer to be showery weather, with squalls, and often it will draw back again to the southward, with a repetition of rain and wind.

This I have observed to be the general course of winds agreeing with the above theory in northern latitudes, while it is the reverse in southern latitudes; the wind commencing after a calm from the northward, is increasing with rain, and followed by the wind from the south-west, which decreases to a calm.

It is scarce probable that human foresight will ever be able to form any tolerable idea respecting the duration of winds, or the time of their change; the great alterations we have in weather from heat and cold, especially about the Equinoxes, renders the winds very uncertain in those latitudes; I have known for several days together, the wind flying round in twenty-four hours, *viz.* in the afternoon calm; about sun-set it sprung up from the southward, or south-south-east, and put to courses by midnight; about 2 A. M. flying to west-north-west, or north-west, a hard gale; it died away about 2 P. M. into a calm, and after this repetition, fixed in a west-south-west almost continual, with bad weather for several weeks. I was once six weeks from Ireland to the Grand Bank of Newfoundland, during which time we had no winds from the eastward; and I have been near as long in beating off the Cape of Good Hope during the last war, when ordered not to come near the Cape before half that distance could be attained; so fixed are the winds sometimes in the Western Board.

Did this general cause not exist, we should probably, in northern latitudes, after an
increasing

increasing southerly gale had condensed the air to the northward; we should have, I say, a north, or north-east wind from the overcharge, which sometimes is the case; but the general cause being prevalent, the wind takes a direction in general from the joint effect of both, viz. from the north-westward, and as the westerly or northerly predominates, inclines more or less to the west or north.

What I have mentioned above is the common course of bad weather in the Ocean; and we often have seasonable weather with pleasant breezes for a long time together, especially in the summer season; but near the shores of continents, and on land, the weather differs considerably; for though, in this island, the winds from the north-east quarter often bring rain, yet those rains are supplied from the south in the upper regions of the atmosphere, which, meeting with northerly winds, is condensed into rain, snow, or hail, according as the cold predominates; and although it more frequently happens that the southerly wind prevails, yet it is sometimes the reverse, and that from the north-east continues with dry weather, which must follow in consequence, if the moisture is not supplied from the southward; hence we may easily conceive the cause of having more rain falling in high latitudes than the moisture taken up in evaporation can afford, and less rain between the tropics than the exhalation.

On the western coast of England we often experience a heavy south-west sea breaking upon the shores, which indicates that such a wind is prevailing in the Ocean, while the wind is north-eastward; and I have sometimes known the south-west wind to reach within a few leagues of the coast, for a day or two, with north-east wind or calm. I have not a doubt that the same may often be the case on all the western shores of Europe.

If in the interval of calm the day be remarkably warm, with a clear sunshine, we may expect the heavier gales to follow, especially about the Equinoxes, or in the winter season; for the warmth, by rarefying the atmosphere, is more the prognostic of a gale than a commencement of settled weather.

The great losses sustained by this maritime country on the Ocean, are in general much increased by those gales taking the mariner unawares; and it is better to secure the ship, though disappointed in your conjecture, and with some loss of time, than to suffer distress by being unprepared. We have often known old crazy ships to bring home cargoes, almost free from damage, through such gales, in company with much better vessels which have foundered, or received considerable damage in their cargoes; this difference must have happened, on one side from the degree of precaution which was thought requisite to preserve the weak ship, and on the other from the mariner's blind confidence in the stoutness of his vessel. I have heard a gentleman of experience remark, that the greatest damage suffered in the cargoes of the East India Company has generally been in tight ships.

D I R E C T I O N S,
GENERAL AND PARTICULAR,
FOR SAILING FROM
E N G L A N D
TO THE
CAPE OF GOOD HOPE.

OF THE PREVAILING WINDS IN THE ATLANTIC AND ETHIOPIC
OCEANS.

AS it is essentially necessary for the navigator to have a thorough knowledge of the direction of such winds as chiefly prevail through the whole extent of those seas which he is obliged to pass over, we shall treat here, in the first place, of the winds most commonly met with, as well in the Atlantic as in that part of the Southern or Ethiopic Ocean, comprised between the Equinoctial line and the Cape of Good Hope.

In the European seas, and even as far as the 28th, and sometimes the 20th degree of latitude, the winds are variable, and blow sometimes from one quarter, sometimes from another, without appearing to be subject to any constant rule, in whatever season of the year it may be. This same shifting of the winds prevails equally in the southern hemisphere beyond the 28th degree.

From the 28th degree of north latitude, to the Equinoctial Line, we find those regular winds, commonly called *Trade Winds*, which blow from N. N. E. to East during the whole year. This rule, though general through the whole extent of the Atlantic Ocean, is yet liable to many exceptions, especially near the coasts of the Continent, in the neighbourhood of islands, and in other places, from particular causes.

In examining the journals of the most experienced and intelligent navigators, we generally remark, that the coasts of those vast Continents, which lie between the Tropics, are almost always blown upon obliquely, from seaward, by winds whose direction is relative to those that prevail in the extensive surrounding seas. It is in consequence of this law, the natural cause of which is well ascertained, that on the African

coast.

coast from Cape Blanco as far as Sierraleon, the winds (excepting always land-breezes and storms) blow rather from the North to N. W. than from the North to the westward.

From Sierraleon to Cape Palmas, the ordinary course of the winds is from W. N. W. and beyond Cape Palmas from W. S. W. to S. W.

Though the Canary Islands lie within the tract of the trade winds, yet we find westerly and south-westerly winds sometimes prevail there; which may continue for eight days successively without interruption.

Southerly and south-westerly winds blow also between the Cape Verd Islands, and in their neighbourhood, during the months of July, August, September, and October; and in that season of the year it is by no means safe to frequent the Roads of these Islands.

Most of those who have treated of the trade-winds have laid down their limits towards the Equinoctial widely different from what they are in reality in each season; the inferences which might be drawn from such assertions, would mislead navigators, and we must, on a subject of so much importance, have recourse to facts and experience in preference to common opinion.

After a careful inspection into above 250 journals, to find in what degree of latitude vessels which sail to the East Indies have lost trade-winds, and on what parallel of latitude they have met with them on their return, it has appeared to me, says Mons. *D'Après de Manneville*, that in the month of January, the limits of the true trade-winds are found between the 6th and 4th degree of north latitude: in February we meet with them between the 5th and 2d degree; in the month of May between the 6th and 4th degree of latitude.

During the months of June, July, August, and September, the action of the sun's rays upon the lands and seas in the northern part of the globe, renders the winds less constant by altering the state of the atmosphere; so that in the month of June, the trade-winds discontinue blowing at the 10th degree of latitude; and in the months of July, August, September, between the 14th and 13th degree; nor do they finally resume their mean boundaries but in the months of December and January.

When we leave the trade-winds, we meet with variable winds, calms, and storms, occasioned by the conflux of the trade-winds with the general winds; and by many other particular causes, which prevent us from fixing exactly the extent and direction of the trade-winds in each respective season.

It is remarked only, that the nearer you approach to the ordinary tract of the trade winds the more this shifting is affected by it; and on the other hand, when you are near the Equator, the winds vary more frequently from East to South, than from East to North; but this does not prevent you from finding winds sometimes blowing in the same tract from West to South, and chiefly in the months of July, August, and September.

tember. But these winds almost always proceed from storms, and ought only to be looked on as foreign, or occasional winds, destined to restore the equilibrium of the atmosphere when the air is too much rarefied to the eastward.

From the Equinoctial Line to the Tropic of Capricorn, a regular trade-wind prevails, which blows generally and constantly between the South and the East; and as the same winds are prevailing, not only in the ocean comprised between Africa and America, but even over the whole extent of the seas southward of the Line; they are named

General Winds, in order to distinguish them from the north-easterly trade-winds, which in some particular seas are subject to periodical variation.

Dr. *Halley*, whose authority in every thing which relates to navigation merits our utmost regard, observes, that the different seasons have a sensible influence on the direction of the trade-winds, as well as upon that of the general winds; so that when the sun is at the greatest declination north of the Equator, that is to say, when he is in the Tropic of Cancer, the S. E. wind, particularly in that part of the ocean between Brasil and the African shore, will vary a quarter, or half a point of the compass more to the southward; and that the north-easterly trade-wind veers more to the eastward. The contrary will happen, says Dr. *Halley*, when the sun is near the Tropic of Capricorn; the winds blowing from the S. E. veer a little more to the East, and those blowing from the N. E. which prevail to the northward of the Line, hang a little more to North than to East.

During a whole year's residence at the island of St. Helena, Dr. *Halley* observed, that the general winds reigned there constantly from the S. E. or thereabouts, that is, the wind which blew most frequently, veered rather from S. E. to eastward, than from S. E. to southward; when it blew from the East, the weather was dark and gloomy; and it never cleared up, nor was serene till the wind veered back again to S. E. Dr. *Halley* says also, that he never observed the wind to blow from the south to westward, nor from North to N. W.

Besides, if from the effect of a storm, or any other particular cause, the winds take a different direction from that which they commonly have in the same tract, these accidental differences are to be made an exception to constant and general laws.

The extent of the general winds is not limited at the Line; they are met with as far as five or six degrees to the northward of it, and sometimes even to seven degrees, according to the seasons. Sometimes the N. E. and S. E. trade-winds extend very near each other, and at other times there will be several degrees between them subject to calms, squalls, thunder, lightning, and heavy rains.

The general winds, as well as the trade winds, always take a different course along the coasts of the Continents, from what they do out at sea. All along the coast of Africa, from the 28th degree of south latitude down as far as Cape Lopo Gonçalvez, which lies near the Line, the direction of the wind is almost always from South to S. S. W. and even to S. W. in some places, according to the particular bearing, or situation
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of the shores and lands; it is observed likewise, that the same tendency of the winds from South to S. W. is met with at a very great distance from the coast of Africa, and that in general it appears to be bounded to the westward by the tracts comprised between that coast, and an imaginary line drawn from the Cape of Good Hope to Cape Palmas on the coast of Guinea.

On the coast of Brasil, the general winds are subject to periodical shiftings, according to the respective seasons; they blow there from N. E. to E. N. E. from September to March, and from S. S. E. to E. S. E. from the month of March to the month of September.

In the course which vessels commonly steer in their passage from the Equinoctial Line to the Cape of Good Hope, we remark farther, that the winds beyond the parallel of sixteen degrees veer to the northward, so that they are observed rather to blow from East to N. E. than from East to S. E. This is not general, though often the case.

With respect to the limits of these general winds that are commonly fixed at the 28th degree of latitude, this is another general rule which has its exceptions, since we frequently meet with different winds before we reach that latitude, and sometimes even on this side the Tropic of Capricorn to the southward of twenty, or twenty-one degrees, for example, westerly winds are met with in the months of June, July, and August. Though from the parallel of twenty-eight to forty degrees of south latitude, the winds sometimes have been found as variable as in the European seas; it is known from experience that you must run into a high latitude for the sake of constant westerly winds, and as you approach to the southward, the weather becomes boisterous, and the winds blow from N. W. to S. W. sometimes an easterly wind happens, but seldom lasts long.

In the parts adjacent to the Cape of Good Hope, the winds blow sometimes from S. E. to E. S. E. for many days successively without intermission, but in general you have easterly or westerly winds, according to the season of the year.

D I R E C T I O N S

FOR SAILING FROM THE

BRITISH CHANNEL

TOWARDS

PORTO SANTO, MADEIRA, THE CANARIES, THE CAPE VERD
ISLANDS—AND TO THE EQUINOCTIAL LINE.

HAVING failed out of the Channel, you ought to shape your course so as to pass Cape Finisterre at the distance of 50 or 60 leagues; a less distance is even sufficient in any season of the year, and you may indeed double that Cape very near, just as circumstances require; but from its latitude you should always steer for the island of Madeira.

Though the making of that island is not indispensably necessary, it is very proper, however, to get a sight of it, or of the island of Porto Santo, that you may be able to keep on your course afterwards with greater certainty; whether you pass between the Canary Islands, or whether you propose to leave them to the eastward. It is to Madeira and Porto Santo that sailors have given the name of the *Madeiras*.

At the distance of 28 leagues, N. by W. from the northernmost point of the island of Porto Santo, there are several rocks even with the water, the southernmost of which lies in $34^{\circ} 30'$, and the northernmost in $34^{\circ} 45'$; so that the whole extent of this ledge is 5 leagues from North to South, and 3 leagues from East to West; observe likewise that the southernmost rock lies 40 leagues N. 5° E. from the easternmost point of Madeira.

Three leagues to the north-eastward of the middle of Porto Santo, there lies also a ledge of sunken rocks, on which a Dutch vessel was lost.

PORTO SANTO lies about 12 or 14 leagues to the north-eastward of Madeira, and has a very good road on the S. W. side, where good water and refreshments can be got; should you get into the latitude of this island to the eastward, and not see it, your course should be W. by N. $\frac{1}{2}$ N. by compass. Porto Santo is very remarkable, and may be seen in fine weather, 15 or 20 leagues off. When you first make it you will discover two or three very high hummocks, by which you will distinguish it from either Madeira, or the Desertas. Being abreast of Porto Santo, and about 4 or 5 leagues to the south-westward of it, the

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course

course will be W. by S. $\frac{1}{2}$ S. or W. S. W. by compass, to carry you through between Madeira and the Desertas.

The DESERTAS, or, as the English sailors call them, the *Deserters*, lie nearest North and South by compass, the largest inclining to the N. N. westward; when they bear W. by N. about 10 leagues distant, they appear in two separate islands, the northernmost, or Flat Deserter, being nearly even, long, and high; the southernmost, or Bogio, in two hummocks, almost as high and about two-thirds long; at 6 or 7 leagues distance, a small island off the northernmost extreme, becomes discernible like a low wall; close to this is a high rock frequently mistaken for a large ship under sail. The passage between the two Desertas is clear, though bounded on each side by breakers, or rather by a surf, but not to be attempted unless from necessity, as it is very narrow, and no soundings, or at least very deep water in it, and a ship is liable to be becalmed in it by the northernmost Deserter, which overlaps the Bogio.

The ISLAND of MADEIRA is very high land, except the east end, which terminates in a low rugged point; but it is frequently covered with clouds, so that it is scarce visible at 5 or 6 leagues distance, and even sometimes you get quite close before you discover it.

Between the Desertas and Madeira is a clear passage 8 miles broad, and no danger but what can be seen, but no soundings in it, except at 50 or 60 fathoms, almost close over to the Madeira side. In the season of the breezes (i. e. of the N. E. winds which prevail in summer) there is a strong current through this passage towards the S. W.

Off the Valley of Funchal there are regular land and sea breezes, particularly during the summer; the sea breeze setting in from the south-westward some time in the forenoon; the land breeze coming off shore about ten o'clock at night, sometimes later, even to two or three o'clock in the morning. These breezes do not extend above 3 or 4 miles off shore, but when it blows fresh in the offing, there is generally a counter breeze in the stream of the Valley of Funchal; unless it blows hard, then the true wind prevails also in the road, although, if from the southward, it never blows hard quite home, but throws in a very large hollow swell, which makes it unsafe at those times. These Southwesters, or South-south-easters are never expected except in January, February, and the beginning of March: large ships almost always ride them out, but it is most prudent for small vessels to go out of the Road on the appearance of them.

Squalls sometimes come fresh off the land; there is one instance of a hurricane down the Valley of Funchal, blowing every ship out of the road in January, and being so violent, that the ships were hid from the town by the spray of the sea it raised, although in a clear sun shining day.

From all this it appears advisable for ships, however large or numerous, bound into
Funchal

Funchal Road from the eastward, with the wind north-easterly, to go through the passage between the Desertas and Madeira, steering as near the midchannel as possible, and not to borrow on the Madeira shore too soon. After you have passed the Desertas, you ought to steer for the low point to the westward of Funchal town, and not keep too near the Brazen Head, until you are almost off the town, and then haul directly in for the road. The Brazen Head is a high steep cliff to the eastward of the road, whose form, in some directions, appears not unlike to the stern of a very large ship. Vessels, by keeping too near the Brazen Head, have frequently been baffled a good deal by eddy winds and calms, and obliged to get their boats out and tow; but on the contrary, by keeping as before observed, they will in general bring the breeze on with them, and when they lose it, they will find it veer to the south-westward; nevertheless, if in the night a single ship should keep very near to that bluff point, and with her boats towing a-head when becalmed, luff up into the stream of the land wind, and by that means fetch into the anchorage; she must also shew a light at her ensign-staff, to prevent being fired at from the castle.

Soon after you have passed the Desertas, you will descry the ships in Funchal Road, and be able to judge from their riding how the wind is in the road, as it is very common that a vessel should pass these islands with a strong breeze from N. E. or East, while the ships are riding sometimes with the wind from the south-westward, and sometimes from the W. S. W.

In steering in for the road you will see the Loo, a large rock, a little to the westward of the town, on which there is a Fort bearing N. by E. $\frac{1}{4}$ E. or N. by E. by compass; and letting go your larboard anchor in 36 or 38 fathoms water, be sure to have two cables on it, for if you come in with a fresh breeze from the eastward, you scarcely bring up till you have veered the splice out a good way. To ride in the road, prudence requires that it should be with a whole cable, with the splice in such a manner, that should you be obliged to put to sea on account of the weather, and not be able to weigh, you may be able to cut near the splice. While there you ought to keep a ship buoy on the cable; carry out your kedge anchor with the nine-inch hawser to the westward, to steady the ship, and let the hawser be on the starboard bow, on account of the usual course of the wind veering from the eastward to the south-westward, and then to the westward. When the land wind comes off, you will have a cross, but then the end of the hawser may be shifted at pleasure.

The best anchorage is in from 18 to 30 fathoms, sand, to the south-eastward of the Loo Rock, having the Citadel (called also the Spanish Castle, a brown square fort on a hill over the W. N. W. part of the town) well open to the eastward of the Loo Rock; to the westward of this, the ground is sand and rock; to the eastward stiff clay, but deep water, and near the east edge of the bank, which is very steep on this

side, foul ground and rocky. If you come in with a fresh easterly wind, when you bring to, in order to anchor, it is proper to do it with the ship's head to the southward, for should any thing happen to prevent your bringing up, the ship's head being off, you can make sail, or do any thing you please. If from over caution, or other reasons, you should fall 2 or 3 leagues to the leeward of the road, you ought to keep plying up in the stream of the valley, until you fetch into the vein of the sea breeze.

There is generally a surf on the beach, early in the year particularly, which prevents landing in a ship's boat any where except within (to the north-westward of) the Loo Rock, about half a mile from the town, therefore the boats of that place are employed for goods, watering, &c. The tides rise and fall about $7\frac{1}{2}$ feet; and the current along the South side of the island, seems to be always governed by the true wind in the offing. The rainy season is in January, February, and March; October is also frequently a wet month.

The small vessels from North America, and the Western Islands, come in generally round the west end of Madeira, but they are frequently becalmed a considerable time under the high land there. For this reason, ships on leaving Funchal should make sail with the land wind, and stand directly off from the road; ships bound to the southward, by taking a contrary method, have continued several days becalmed under the western part of the island.

From the island of Madeira to the Equinoctial Line, you may direct your course so as to get a sight of, or to pass between the Canaries, and from hence to proceed to the Cape Verd Islands; or you may steer farther to the westward, without seeing any of the islands. This course appears preferable, which carries you without the Canaries, so as to go about 30 or 40 leagues to the westward of Cape Verd Islands; though you lengthen your distance by it, yet you shorten your passage by getting constant fresh trade winds in lieu of light winds and calms, which are common among the islands, and you avoid several dangers in their neighbourhood. When to the southward of St. Yago, or in the latitude of it, haul as close as you please, according to the season, so as to meet variable winds far enough to the eastward, and be able to push southward, and cross the Line from 18° to 22° West of London; it is needless to lose time in endeavouring to cross far to the eastward, for your passage depends upon getting through the variable winds into the S. E. winds; and when in them to go with the yards not braced up, and flowing sheets. The little difference is easily made up by the westerly winds you are certain to meet with to the southward.

If it is your intention to pass by the CANARIES, a course nearly south by S. by W. $\frac{1}{2}$ W. steered with an open wind (the variation allowed and true course found) will get you a sight of these islands, which will be easily known in referring to the Views engraved on the Charts. When circumstances require it, you may pass between the Canaries and through their principal channels, where there is no danger, but what may be plainly discerned, except

cept a funken rock laid down in the Spanish Charts, at the south end of the channel between TENERIFFE and Canaria, about 5 leagues West of Canaria, and 7 leagues S. E. of the south point of Teneriffe. The road, or port of Santa Cruz in the latter island, though not remarkably fine, is the best in the Canaries, and the usual at which vessels touch for refreshments. Should you have any occasion to stop there, particular care must be taken in going in, not to bring any part of the town to the northward of West, for fear of the calms occasioned by the high land under the Peak; you would then be in danger of driving upon the rocks on the shore, and when ashore you will have no ground on the opposite side of the ship with two hundred fathoms of line, so that anchors and cables are of no use.

When you leave the Canaries, if the want of water or other refreshments should oblige you to touch at St. Yago, the principal of the CAPE VERD ISLANDS, your best way is to fetch either the island of Sal, or that of Bonavista, directing your course about S. S. W. till you come in the latitude of the first, $16^{\circ} 50'$, with about 11° W. variation, when you will be 12 or 14 leagues to the eastward of it. Then a W. by N. course will keep you in that parallel nearly, observing to make allowance for the variation, as well as for a southerly current, which you have always amongst and near these islands.

The island of SAL is a high bold island, with a peak upon it that may be seen a great way in clear weather. The island of BONAVISTA is very uneven land, having many scattered hillocks and mountains, with vallies and very low lands down to the water's edge; the S. E. point is a very low spit of land, whose extent you do not perceive till you are near it. These two lands bear from each other North and South about 7 leagues, and you cannot pass abreast of their channel without seeing them both. As soon as you get sight of them, keep to the East of Bonavista, and when you have passed it, steer for Mayo, which lies about 14 leagues S. S. W. from the latter. The land of MAYO rises most towards the middle of the island, whose north point is distinguished by a ledge of rocks, which stretches out near three-fourths of a league into the sea.

Though it may seem natural enough not to suspect any errors in consequence of the reckoning in so short a passage as from the Canaries to the isles of Cape Verd, yet there are instances of such, as well to the easting as to the westing, so that you ought to keep 12 or 14 leagues to windward of Bonavista, before you stand in to make the land, lest in steering a direct course for that island, you should pass between the isle of St. Nicholas and the island of Sal; and finding yourself to the westward of Bonavista, when reckoning to be still to the eastward of it, you should miss the island of St. Yago. You must be careful on that course of the *Bonetta Rocks*, which lie 22 leagues to the eastward of the channel between Sal and Bonavista; and also of a still more dangerous reef of rocks nearer Bonavista: according to the Portuguese pilots this lies at about 6 leagues from the

the island, having one cable's length in breadth, and about two in length. The English account makes that shoal lie 10 leagues N. E. of Bonavista, about $1\frac{1}{2}$ foot above water, with 13 fathoms close aboard of it.

We must observe here that ships coming from the northward, in steering a different course from that recommended above, have often missed the island of St. Yago, and the disappointment must be attributed to the two following causes. 1st. In the season of the year they want to touch there, the sun being near the zenith of the island, their observations cannot be very correct. 2d. At this time also the fogs are so very thick all round the Cape Verd islands that you can scarcely descry them.

In running from Bonavista to St. Yago, and being obliged to ply to windward during the night, you must be cautious how you approach Isle Mayo, on account of the ledge before mentioned at its north point; when you have doubled that point you should steer S. W. to make the land of St. Yago, and keep along the coast till you come to the Road of Praya, which is the common place of anchoring. You may also pass to southward of Mayo in sailing for the Road of St. Yago, and after doubling the south point of the island, you steer for making land to windward of the point of Port Praya.

The S. E. part of the Island of St. YAGO appears a long low point when you are to the northward or southward of it; and from this point S. W. by S. about 6 or 7 miles lies the east point of Port Praya Bay. Between the two, and near the former, lies a Bay which so much resembles that of Port Praya, that many vessels deceived by this likeness have ran the hazard of being lost in this dangerous place; at the bottom of it are several cocoa nut trees, and a few houses; the land between this and the aforesaid point of Port Praya is mostly perpendicular, in some places appearing like the Berry Head in Torbay; and though the Fort of Port Praya, which stands on a small cliff, is a mark by which the true bay may be distinguished from the false one, yet the most certain mark is that the North or East point of the false bay is surrounded with breakers, whereas the point of Port Praya is high and steep, and free from shoals; you must haul close round this point, and keep within a cable's length of the shore to go to the anchoring place.

PORT PRAYA is a fine bay which lies between two points bearing from each other W. by S. and E. by N. about a mile and half. As you sail round the east point, you will soon open the Fort at the bottom of the bay, to the westward of which, in a valley, are several cocoa nut trees and a small house.

The winds, except in the Tornado season, are generally in the N. E. quarter, and frequently blow fresh and squally, therefore as you haul into the bay, it is necessary to have the top-gallant sails furled, and to take one reef or more in the top-sails. The cliffs from the east part to the Fort are as those above described; you may sail within a cable's length of the east land, where you will have 8 or 7 fathoms water, and in many places see the ground in that depth.

In this bay lies a small black island called the *Ile of Quails*, or Frenchmen's Island; it is almost even to the top, but rugged at each end, and some rocks lie off its south end about half a cable's length; there is also a rocky ledge off the north end, where the water is in general shallow; you will not have more than 3 fathoms between this and the Fort; inside, or to the westward of the island, it is only navigable for boats.

The best anchorage is to bring the Fort N. W. $\frac{1}{2}$ N. about one mile, the east part of Quails Island W. by S. or W. by S. $\frac{1}{4}$ S. $1\frac{1}{4}$ mile; there you will have 7 or 8 fathoms; many commanders, however, prefer to anchor nearer the N. E. side of the Bay than the *Ile of Quails*, for the sake of more easily getting under sail, without running the risk of being carried by the currents upon the point of rocks to leeward, before the vessel has got fresh way enough to steer clear of them.

A general opinion has prevailed, that ships bound to the Cape of Good Hope, who pass the Equinoctial Line, within certain limits of longitude, have a shorter passage than those who happen to pass it too far East, or too far West. The whole extent of the limits assigned is between the 26th and the 12th degree of longitude West of London, as westward of the 26th degree ships are exposed to be driven towards the coast of Brazil, and eastward of the 12th degree they are threatened with calms of long duration, and currents that would carry them on the coast of Africa. Without rejecting absolutely that opinion, it must be observed, that the first of these two inconveniences, is the only one confirmed by experience; as for the second, there is scarce one instance to be met with which in the least favours it.

Vessels which sail from St. Yago to the Equinoctial Line, should steer S. E. as far as the 12th degree of latitude, after that S. E. by S. till they meet with the S. E. trade winds. When in the variable winds between the N. E. and S. E. trade-winds, the best method of working, for crossing the Line with speed, is to take the advantage of the shifts of wind, and for this end to keep indifferently to that tack which bears most to southward; at the same time keeping in 20° of West longitude, or to the eastward, when you meet the S. E. trade wind; this often, when you first meet it, and for some days, hangs much to the southward, especially in the months of July, August, and September, so much so, that some ships have not been able to weather Cape St. Augustine on the coast of Brazil. Having got the S. E. trade, if it be tolerably favourable, keep a clean sail, so as to make the most southing; for about the Equator there is generally a westerly current, and the longer you hang in it, the more you will feel its effect; therefore if you keep a point free through the S. E. trade, you will find the advantage in the end, by getting sooner into the variable winds in high latitudes, which prevail from the westward at all seasons of the year; though sometimes they blow several days together from the S. E. and by turns from all quarters. Between 20 and 30 degrees of south latitude the S. E. trade generally draws to the eastward, N. E.—North, and N. W. and
often,

often, between the trade and variable winds, you will meet with light airs and calms: but having free winds you should make a S. E. course good, till you get into latitude 33° to 36° south, if you intend to touch at the Cape, if not, 36° or 38° south is the best latitude for running down your casting. It has been formerly recommended, as an indispensable requisite, to strike ground on the Bank of Cape Lagullas, to take a fresh departure, but if the navigator takes Lunar observations, he must be as certain in his longitude, as those soundings will determine; besides much time is lost in shortening sail, and bringing to to sound. There are also, in general, strong westerly currents setting over this bank, but in 37° or 38° south latitude, the current generally sets towards the East, by which means you will accelerate your passage to the eastward.

In this passage it will be proper to keep a good look out, there being several shoals to the southward of the Equinoctial, whose situation, though not precisely ascertained, is laid down in the Chart from authentic report; they lie also in the track which is followed by ships going to Brazil, as well as in that which they often injudiciously keep on their return from the Indies. As for the islands that are scattered in the Ethiopic Ocean, and which ships may likewise expect to meet with, we shall take notice of some of them in the next article, and of the others in the last section of this work.

If you intend to touch at the BRAZILS, attend to the following Directions.

D I R E C T I O N S

FOR GOING TO THE

C O A S T O F B R A Z I L,

AND FOR SAILING FROM THENCE TO THE

C A P E O F G O O D H O P E,

ISLE OF FERNAND DE NORONHA,—PORTUGUESE ISLAND OF
ASCENSION,—RIO JANEIRO,—ISLE OF TRINIDAD,—ISLES OF
TRISTAN DA CUNHA,—GOUGH'S ISLAND, &c.

WE must begin by observing that stopping to refresh on the Coast of Brazil is very prejudicial in voyages made to India and China; the delays which it occasions expose vessels to the danger of missing the principal places they are bound to; especially

pecially if the time of their passage should be limited, or, at least, they run the risk of not arriving as soon as might be convenient. To this we may add the loss which the ship's crew may suffer by those epidemical distempers that frequently happen after having reached the coast of Brazil. Two motives only can oblige you to make that coast, which are the absolute necessity of careening the vessel, and the extreme want of fresh water.

Vessels which intend to touch at the Coast of Brazil, ought to pay due attention, in order to make the land to windward, according to the periodical winds blowing on this coast, and which commonly determine the set of the currents there, either to the northward or to the southward.

These periodical winds prevail from S. S. E. and E. S. E. from the month of March quite to the month of September, and then the current runs to the northward. From the month of September quite into March, the winds that blow from N. E. and from E. N. E. drive the waters to the southward; for this reason vessels, in the first case, ought to make land to the southward of the place they are bound to, and to the northward of the same place, in the second case.

In this track you may get sight of Fernand da Noronha (pronounced Noronia), whose longitude and latitude, as well as its distance and bearings, from the Brazilian coast, are well ascertained.

FERNAND DE NORONHA is remarkable by a high rocky peak, called the *Pyramid*, very barren and rugged, and by its S. W. point, named the *Hole in the Wall*, which is pierced through and gives a free passage to the sea. The south point is distinguishable by a little rocky Islet, that appears like a statue. The island is about 10 miles long, and between 2 or $2\frac{1}{2}$ miles broad, producing black cattle, sheep, poultry, melons, corn, &c. with wood and water in abundance. It is the rendezvous of vessels employed in the southern Whale Fishery, for procuring those supplies, and the ships in the African trade frequent it for the same purpose; should you be obliged to approach it, you have no soundings till very close in, but no danger but what may be seen, except a rocky spot on the south side, 3 miles off shore. You must anchor in the Road on the north side of the island in 13 fathoms, loose sandy ground, about one mile off the shore. Fernand de Noronha is inhabited by Portuguese exiles, and has a strong garrison, all the little sandy bays and anchoring places being defended by forts; but there are no women on the island. There is good fresh water to be got here from a well near the governor's house, but you are obliged to roll your casks over some rocks, and swing them off to the boat, on account of the surf. The wood is cut on a little island near the north point of the large one; it is called *Wood*, or *Wooding Island*, and it produces good grass; with some wild goats, but there is great risk of staving the boat while you take the wood off the rocks, as it sinks, if thrown into the water. If the Portuguese would let you cut wood on the main island, you might load without much danger, in the fine sandy bays to the westward of the Road.

If you should happen to pass between Fernand de Noronha, and the Coast of Brazil, you must take notice, that about 30 leagues, westward of the island, there lie the *Rocas*, which are low sandy keys, with shrubs upon them; a shoal lies also, according to the Portuguese, about 25 leagues to the S. W. and another discovered by the English, 45 leagues to the W. N. W. of the same island.

In general, vessels should endeavour to make the Coast of Brazil, if bound to Rio de Janeiro, about the latitude of 22° or 23° . CAPE FRIO, a remarkable headland near Rio Janeiro, lies in $22^{\circ} 41'$, and in the passage to that Cape you will meet with soundings above 30 leagues off the coast, between $17^{\circ} 30'$, and 19° of latitude, from 30, 33, 18, 15, 27, 36, 40, 33, and 38 fathoms water; and then at 20 leagues East of Cape Frio you will get 50 fathoms, rocky ground.

RIO DE JANEIRO, commonly RIO-JANEIRO (River January), called also St. SEBASTIAN, is at present the capital city of all Brazil, and has been for some time the residence of the Viceroy. The entrance of its harbour, one of the finest in the world, is situated about 22 leagues W. by S. from Cape Frio, and may be known by a remarkable hill in the form of a sugar-loaf, at the west point of the Bay; but as all the coast is very high, and rises in many peaks, that entrance of the harbour may be more certainly distinguished by the islands that lie before it, one of which, called *Rodonda*, or Round Island, is high and round like a hay stack, and lies at the distance of $2\frac{1}{2}$ leagues from the entrance, in the direction of S. by W. but the first islands that are met with coming from the East, or Cape Frio, are three small islands that have a rocky appearance, lying near to each other at a point distant 7 miles from the harbour.

The entrance of this harbour is not wide, but the sea breeze, which blows every day from 10 to 12 o'clock till sun set, makes it easy for any ship to go before the wind; and it grows wider as the town is approached, so that abreast of it there is room for the largest fleet in 12 or 15 fathoms water, with an easy bottom; at the narrow part the entrance is defended by two forts, viz. *Santa Cruz*, the largest on the east side, and *St. Joao*, or *Lozia*, on the west side of the bay. The distance between them is about one mile, but the channel is not quite so broad, because there are sunken rocks which lie off each fort, and in this part alone there is danger. The narrowness of the channel causes the tides, both flood and ebb, to run with considerable strength, so that they cannot be stemmed without a fresh breeze. The rockiness of the bottom makes it also unsafe to anchor here; but all danger may be avoided by keeping in the middle of the channel. Coming from the East into the harbour, you must stand directly for the *Sugar Loaf*, and steer right in, almost close to it, then haul over for the next point above, or within the point and Fort Santa Cruz; when opposite to that you are clear of all hidden danger; within the entrance the course up the bay is first N. by W. $\frac{1}{2}$ W. one league more will carry her to the *Ille das Cobras*, which lies before the city; she should then keep the

the north side of this island close on board, and anchor above, before a monastery of Benedictines, which stands upon a hill at the north-west end of the city.

There is a regular tide here of 7 hours $\frac{1}{2}$ ebb, and 4 hours $\frac{1}{2}$ flood, with little or no slack; and it runs at the rate of 3 knots and $\frac{1}{2}$, or 4 knots per hour. It ebbs and flows N. E. and S. W. on the full and change, and then it is high water about half an hour after four o'clock. Here is a yard for building shipping, and they are very expert at heaving down, but the rise of the tide is so inconsiderable, that they cannot have any docks.

Ships water here at the fountain in the great square; they land their casks upon a smooth sandy beach, which is not more than a hundred yards distant from the fountain; but this water is not good; and Captain *Cook* has observed, that after having been two months at sea, confined to the water in their casks, which was almost always foul, no body on board his ship could drink with pleasure the water taken at the fountain of Rio Janeiro.

Provisions, except wheaten bread and flour, may be easily procured at Rio Janeiro: as a succedaneum for bread, there are yams and cassada plenty; beef, both fresh and jerked, but very lean, may be bought very cheap. The people here jerk their beef by taking out the bones, cutting it into large but thin slices, then curing it with salt, and drying it in the shade: it eats very well, and if kept dry, will remain good a long time at sea; mutton is scarcely to be procured, and hogs and poultry are dear; of garden stuff and fruit there is abundance, of which, however, none can be preserved at sea but the pumpkin; rum, sugar, and molasses, all excellent in their kind, may be had at a reasonable price; tobacco also is cheap, but it is not good.

If the winds carry you so far to the westward that you get sight of Trinidad, you may pass between that island and the three small islets of Martin Vaz to the E. N. E. of it, or you may sail to the windward of all, as the wind will permit.

The Island of TRINIDAD, or TRINITY, called by the sailors *Trinidad*, lies about two hundred and twenty-four leagues E. by N. from Cape Frio, in $20^{\circ} 34'$ latitude South, and $29^{\circ} 58'$ longitude West of London, according to the observations made by the English in 1781. In approaching it from the eastward, running on its parallel, you make the three islets or rocks of *Martin Vaz*, which may be seen at the distance of 8 or 9 leagues from the ship's deck. These rocks are very remarkable, and cannot be mistaken; they lie North and South from each other, the distance from the outer rock being about three miles. The centre rock is very high, with tufts of withered grass scattered over its surface; the other two are entirely barren; there is a passage between the southernmost and centre rocks. The northernmost almost join. In clear weather Trinidad is distinctly seen from the rocks of Martin Vaz, and may be descried 16 leagues off.

This island is about 6 miles in circumference, the land very unequal, and at best no more than a cluster of rocks, with some shrubs in the vallies. The northernmost side is quite barren, but to the southward all the interstices of the rocks are filled with ever-

greens of several kinds : you also find there a quantity of sea fowl and rock fish, and many wild hogs*. The generality of the wood is very small, though there are trees of 18 inches diameter towards the extreme heights. Trinidad is surrounded by sharp, rugged coral rocks, with an almost continual surge breaking on every part, which renders the landing often precarious, and watering frequently impracticable; nor is there a possibility to render either certain, for the surf is often incredibly great, and has been seen during a gale at S. W. to break over a bluff which is 200 feet high.

The island is supplied with very good water from two small streams down the East and south-west sides of it, besides a small issue from the rock, which forms the south-west extreme; not one of them will fill a tube of 6 inches diameter, and there is a doubt whether these runs are temporary or perennial, though they always produce a small quantity of water sufficient to preserve the existence of a few wretched inhabitants. Lieutenant *Thomas Hamilton*, from whose account this detail of Trinidad is chiefly extracted, speaking of the anchorage says, that they anchored off the west side of the island, at a mile from the shore, to be able to weather it on any tack, should the wind happen to blow on, "being directed," continues that gentleman, "to do so by Captain *D'Auvergne*, who informed us of the wreck of the *Rattlesnake*, and the miraculous escape of the *Jupiter* and *Mercury*." They prudently avoided the common anchorage, which is about a musket shot from shore, in 18 or 20 fathoms water. On that side there stands a stupendous *Arch*, or hole in the rock, like that at *Fernand de Noronha*, and two very remarkable rocks, one called the *Monument*, and the other the *Sugar Loaf*. The Monument is 850 feet high, of a cylindrical form, and almost detached from the island, with large trees growing on its top. This had been named the Nine Pin in the year 1700, by Dr. *Halley*. The Sugar Loaf, at the south-east end, is 1160 feet high, of a conical form, with trees likewise on its summit, and whenever it rains hard, a cascade of above 700 feet, whose water becomes of great use, makes there a beautiful appearance. The Arch is a natural passage made by the sea through a high bluff about 800 feet high; it is 40 feet in breadth, near 50 feet in height, and 420 in length, the depth of water above 3 fathoms. When the sea is moderate you see through this arch into the only bay in the island, and have a view of a distant rock covered with trees, which renders the prospect extremely picturesque.

The above detail of Trinidad, and chiefly of its anchorage, given in 1781, is very different from a descriptive note which Captain *Charles Lesley*, of the *Orford Man* of

* " Captain *Edmund Halley*, afterwards Dr. *Halley* of the *Paramore* Pink, landed on this island April 17th, 1700, and put on it some goats and hogs for breed, as also a pair of Guinea hens, which he carried from St. Helena. " I took, says his journal, possession of the island in his Majesty's name, as knowing it to be granted by the King's Letters Patent, leaving the Union Flag flying." When the English went to Trinidad in 1781, in order to ascertain whether a settlement was practicable there, they did not find it, after a survey of two months, to answer their expectation. Commodore *Johnson* planted various roots on the different heights, but they all died in a short time for want of water.

War, has introduced in his very instructive journal, in 1773 and 1774; we think, therefore, it would be unpardonable not to transcribe here the whole of that gentleman's description. "This Island," says the note, "is laid down in common Charts in $18^{\circ} 30'$ South; but its true latitude, by a good observation of my own, is $20^{\circ} 28'$ South. The longitude, made from the Meridian of London, is generally between 25° and 30° West. I never knew less made than 25° , or more than 30° and I judge 30° to be the true longitude, as in a very fair and quick passage from this island to Cape Frio on the coast of Brazil, I made $12^{\circ} 00'$ West longitude, and the Cape, by the best computation, is in $42^{\circ} 00'$ West longitude from London. The variation, in sight of the island, was $1^{\circ} 20'$ East; in 1768, it had been observed to be only $0^{\circ} 37'$ East."

"The Directions for sailing into the harbour," (so the Captain calls it) "are thus—When the rocks of Martin Vaz (which are E. by S. southerly, distant 7 leagues from the island) bear E. S. E. and the easternmost point of the island N. E. by E. the bay begins to open, wherein, at the upper end, you will see a hill like a sugar-loaf, and a mile from the shore you will have ground at 45 fathoms, coarse sand; on the mouth of the bay you have 35 fathoms, and by the time you get this length, or very soon afterwards, you will perceive three bays, one right a-head, called the Northernmost, or Middle Bay, and one on either hand, called the Easternmost and Westernmost Bays. The east is by far the best, the west being full of rocks, and the northernmost having shoal water, and being open quite to the sea. The east bay is likewise distinguished by a church with a large cross upon it, which stands at the upper end of it; you may anchor in 6 fathoms, the church bearing W. S. W. and a point like the South Foreland, bearing S. W. by W. and thus situated you may moor your ship with only one cable on shore."

"The watering place is near the church, and you may lay your long boat under, and fill with a spout or hose. The island lies in the direct track of the outward bound East India ships, and they always endeavour to go to the eastward of it, but if the S. E. trade does not prove very favourable, they either fall in with it, or go to the westward."

This uncertainty of the S. E. trade, mentioned by Captain *Lesley*, is confirmed by Lieutenant *Hamilton*, who says, "We first saw it (the island) on the 5th of June, on our passage to the Cape of Good Hope, we had then variable winds and calms; and on making it the second time, the 8th of November, we had exactly the same winds and weather, accompanied by a very heavy squall of wind from the westward. During our stay there above two months, the prevailing wind was N. N. E. from hence I conclude the S. E. trade wind is not to be depended on, although the island is so far within the Tropic of Capricorn."

Near 80 leagues to the Westward of Trinidad there lies another island, which is called Ascension by the Portuguese Pilots, who describe it as follows:

"The ISLE OF ASCENSION lies in the same latitude with the Isle of Trinidad, and at 120 leagues from the Coast of Brazil; it was discovered by *John De Nova*, in his passage

passage to India in 1501. It consists of very high land, and on the north side of it lies a cove, with a river of fresh water; adjoining to this cove there is a cavern into which the sea enters; it lies at the foot of a high mountain shaped like a peak or sugar-loaf, which answers nearly to the middle of the island. On the east side you descry another mountain nearly of the same shape, but not so lofty, and these two mountains are the highest in this island; on the west side lie 5 small isles, or rocks, one of which, that stretches the farthest out to the sea, is the loftiest and most distinguishable; it resembles a ship under sail. This isle is desert and covered with thorny shrubs; fowl and fish are to be met with there in abundance.

Notwithstanding the credit which ought to be given to a description so circumstantial, many navigators have been and are still of opinion, that this isle is nothing more than Trinidad itself, which, by the inequality of its surface, appeared under as many different forms as the ship, from whence it is descried, varied her position. But the existence of Portuguese Ascension has been confirmed in 1760, by *M. Duponcel de la Haye*, Captain of the French frigate *La Renommée*, who having sailed by the rocks of Martin Vaz the 4th of June, passed afterwards to the northward of Trinidad, from which he kept a west course, and on the 8th of June made the Isle of Ascension; he saw distinctly a mountain shaped nearly like a chimney. According to the above course of *La Renommée*, Ascension should be about 100 leagues distant, westward of Trinidad, and its latitude 15 minutes more southerly. The frigate, after sailing on about 120 leagues to the westward, touched at Cape Frio, and from thence arrived at Rio Janeiro*.

About 65 leagues to the N. W. of Ascension, and 80† from the coast of Brazil, in 17° 30' latitude, there begins a bank of soundings, which extends to the southward above 40 leagues; the *True Briton* and *Royal Captain* had ground on the North part of it in 1761; the *Endeavour*, Captain Cook, on its West end in 1768; and the *Greenwich*, Captain Benjamin Hook, in her passage to Bombay in 1767, sailed on it above 80 miles. This bank may be useful in correcting the reckoning of the ships, which ought to sound carefully in this latitude.

To the Westward of, and between the 20th and 21st degrees of latitude of Trinidad,

* The existence of this island is still contested by many navigators. Lieutenant Hamilton says in his account of Trinidad, "I am inclined to believe these rocks (meaning those of Martin Vaz) were originally called Trinity from their number, as well as the island now called Ascension. As all these islands are laid down in the same parallel of latitude very nearly; and the *Jupiter* and *Mercury* men of war have determined that there is not any land within some degrees of the longitude in which the island is laid down by modern geographers." Upon this opinion of Mr. Hamilton, M. Dalrymple has made the following remark: Captain Paisley of the *Jupiter*, was in the latitude of 20° 16' S. when 90 leagues to the West of Trinidad; the *Montague* places Ascension in 19° 35' S latitude, and 4° 35' W. from Trinidad, so that the *Jupiter* could not have seen *Ascension* if the situation assigned to it by the *Montague's* journal be right.

† According to the reckoning; but Mr. Dalrymple's correction removes these soundings of the *Endeavour* forty leagues more to the West.

at the distance of 120 leagues, The Old Charts, after the Portuguese Pilot, lie down four islands, which they call *Martin Vaz* Islands: three of them are distinguished by the names of the First, the Second, and the Third Martin Vaz; and the other, which should lie 80 leagues more to the westward, bears the name of *Santa Maria D'Acosta*. It is almost needless to say here, that all those islands are imaginary.

When you are passed the length of Trinidad, as the variable winds you will meet with beyond it, blow more frequently and much longer from the northward than from the southward, you ought by no means, as you sail towards the Cape of Good Hope, to go up a high latitude, in hope of finding the Westerly winds to blow there with more steadiness. It has been already remarked, and it is repeated here, that all experience contradicts this supposition. It is only when you approach the Cape, and at about 200 leagues at most on this side, if you intend to double it, that you can keep between 35 and 36 degrees of latitude, by reason of the South-easterly winds which blow frequently in those parallels.

After those winds are left that seem most commonly to succeed the general winds, if the course, bearing much more to the South than it is suspected here, should carry you (which will happen to ships early in the season) in sight of the Isles of Tristan da Cunha, you may keep out to sea as you pass them, or sail between them without danger; as circumstances shall require.

In the run from Trinidad to those islands, and at about 160 leagues north-westward of them, lies the little Isle of SAXEMBURG in $30^{\circ} 49'$ South latitude. It was discovered in 1670, by a Dutchman, who has given us a view of it, very remarkable by a narrow peak like a column in the middle of the island; it does not appear to have been seen by any other navigator since the discoverer. Westward of this, at the distance of about 40 leagues, there are some breakers; but Captain *Smith*, in the Danish East India Company's service, by whom they were seen, does not seem entirely convinced that it was a shoal; however it is proper to keep a good look out in passing this place. The Portuguese Charts, which take no notice of those breakers, place a shoal above 70 leagues to the northward of Saxemburg, in the parallel of $27^{\circ} 15'$. To the eastward of Saxemburg, and above 200 leagues from the Cape of Good Hope, the Dutch draughts mention the KATTENDYKS DROOGTE, or Shoal.

The ISLES of TRISTAN DA CUNHA, or D'ACUNHA (pronounced Da Cunia), discovered by the Portuguese in their first navigations, were explored and descried by the Dutch in 1643, in the ship *Heemsteede*. The Dutch seem to be the first who have landed there, at least, if we may judge by this circumstance, that the sea gulls which they found there in abundance, would let themselves be caught by the hand. These islands are three in number, forming a triangle, whose north point is the largest isle, which is called Tristan d'Acunha; the two other islands were named in 1767, by the French, viz. The westernmost, *Inaccessible* Island, and the smallest or southernmost, *Nightingale* Island.

The

The journal of *L'Etoile du Matin*, then commanded by Monf. D'Eschevery, gives the following account of the French expedition: "Ninth September, 1767, at 5 A. M. I made the three islands of Tristan D'Acunha, bearing E. and E. by N. distant about 10 or 12 leagues; the wind then westerly, I steered East to examine the middle island, which is the westernmost, and being at noon abreast the north-east point, I sounded at a mile distance from the shore; and when the middle of the island bore West had 20 fathoms, black sand, and small reddish stones.

"This island is high, flat at top, and may be seen at 15 or 16 leagues distance; it is about 2 leagues in circuit, and appears barren, steep and inaccessible; some scattered shrubs are only to be seen on it; I perceived no danger near it, only a rock, like a boat under sail, is visible at the south-east point.

"I stood on, leaving this island, to examine the smallest, which is 3 leagues distant to the S. E. It has at the N. E. point two islets, separated from it about 50 paces, and which have the appearance of an old ruined fort; I passed along at pistol shot distance; continuing to steer along the island, I found ground at 30 fathoms, and, when its middle bore W. S. W. I anchored in 33 fathoms, coarse brown and reddish sand.

"The night threatened bad weather. I postponed sending the boat ashore till morning; according to the report made to me, it is so full of sea weed twined together, that there is much trouble to approach the barren rock which forms this island. The reeds with which it is covered, did not let them penetrate the island, besides the great numbers of penguins, the eggs of which are so close together, that the men could not walk without breaking them; these difficulties, and the want of fresh water, which they searched for in vain, induced them to return on board. They saw plenty of fish on the coast, and aboard many were caught. There are some large ones, a good deal like cod. The latitude of this island is $37^{\circ} 24'$ South.

"The 10th of September I weighed anchor in the morning, and steered towards Tristan d'Acunha, the largest of these three islands, which lies about 5 leagues to the N. N. E. of the little one. It is about 5 leagues in circumference, and so high that it may be seen 25 leagues off. The peak in the middle of it is covered with snow, and the land down to the sea is only covered with bushes. In coasting the island very near, after doubling the north-west point, I descried a cascade which falls into a little bay; I sent the boat to sound this part, and as they found 18 fathoms close to land, and 30 at a $\frac{1}{4}$ of a league from the shore; I anchored in the latter, gray sand mixed with small pebbles.

"The boat which went ashore found no difficulty in approaching it, but from the entangled sea-weed which bars all the coast; they brought aboard a cask of fresh water, and informed me it was easily got, but they could not land, except to the larboard hand of the cascade, on a beach of round pebbles, about the size of an egg; to the starboard of the cascade, are rocks on which the sea breaks much.

"The

"The shore is covered with seals and sea-lions; we caught plenty of fish, especially the kind of cod before spoken of."

We shall add to this description of *Monf. D'Etchevery*, that the westernmost, or Inaccessible Island, is the island which rises with a large blunt top, very much like a hay-cock; and that the variation observed at those islands in 1776, was 5° West. You may generally know when you approach them by the sea-weeds floating on the water, and sometimes met with very far out at sea.

The Old English Pilot knows only one of those islands, which he describes thus: "*Tristian de Cunha*, lies in the latitude of 37° 7' S. and longitude from the Lizard about 10 ¼ degrees W. This island is steep to, about half a mile from the shore, 13 and 14 fathoms, and so decreasing gradually to 3 fathoms close to the shore. There is no shoal, nor broken ground lying off it, except a small matter off the points. It is very difficult getting ashore there with a boat in some places, for near the shore there is large-bodied trees growing under the water, the tops of which lie almost even with the surface, so that in going ashore you are forced to row in and out amongst the boughs; about a pistol shot from the shore side there is fresh water to be had, but the way is very stony, so that you cannot well get it aboard without rolling on boards, or handing it. There you will find abundance of seals, some of them very large, which you may cut down with an ax, for they will not resist you. Here is abundance of drift wood, and several small springs amongst the rocks; in some places you may easily land. Here are neither goats or hogs, or, by report, any other creature but these seals, except a strange sort of bird which goes upright.—*Note.* That three quarters of a mile off this island, there is no ground with 100 fathom line."

At the distance of 180 leagues E. S. E. from the isles of *Tristan da Cunha*, lies a small island, which, from the name of its discoverer, Captain *Charles Gough*, of the *Richmond*, has been called *GOUGH'S ISLAND*. It was explored also in 1758, by Captain *Frederick Vincent*, of the *Osterly*, who being early in the season kept to the southward, in latitude 40° South, and ran a great many degrees to the eastward in that parallel. We shall give here an extract of the journals of both ships.

Captain GOUGH'S Journal, 3d March, 1732.

"At 5 A. M. saw land bearing S. E. by S. about 17 leagues off us; I stood away for it, and as I neared it, hauled more southerly to go round it. I got the yawl ready, and caulked here, and bent the stream anchor, designing, if I found any prospect of landing, to send the boat ashore, and got the fishing tackle ready.

G

"At

" At noon, latitude observed $40^{\circ} 10'$ South. The island bore E. by S. then had a good observation, and made the island to lie in $40^{\circ} 10'$ S. As I rounded the island, saw some streams of water running down, but all seemed inaccessible; and under the lee of it saw porpoises, albatrosses, and sea fowls, and some small birds with black heads and red beaks, such as we have near the island of St. Paul's; two of these birds I observed last night, which made me imagine we were near some land. I kept pretty near in shore till I had got two-thirds round it, and had brought it N. W. by W. and finding nothing to be done, bore away. A fresh gale at N. W.

" This is a very high island, and about 5 or 6 miles long; it is called in an old Portuguese draught, *Gonçalo de Alvarez*. I make this island to lie in longitude $2^{\circ} 58'$ East from the Lizard; and as I judge, here is no variation at all by my last observation."

Mr. NICHOLAS JACKSON'S Journal, 3d March, 1732.

" Saw an island, bearing S. E. by E. about 16 or 18 leagues distant, tolerably high; we stood away for it, in order to run close under the lee of it, with design to send our boat if accessible. At 8 A. M. the body of the island bore S. E. by E. 8 or 9 leagues distant, latitude observed $40^{\circ} 15'$ South; longitude $16^{\circ} 27'$ East from Palma. It bore E. by S. 2 or 3 miles distant, now standing round the south-west point to leeward.—4th, We lust close round the south-west point of the island, and on the south-east side, being the leewardmost; found very smooth water, but had hard squalls and sudden puffs; and no place, by what we could discern, convenient for landing, being in all appearance a steep and rocky shore. We observed, as we stood along the south-west side, 2 or 3 large runs of water coming from the hills and gulleys, which must be undoubtedly good and fit for use, and what at that time we should have been very fond of, could we by any means have got at it. At 2 P. M. bore away. At 3 P. M. the island bore N. W. by W. 5 leagues distance.

" This island, by very good observation, I make to lie in latitude $40^{\circ} 15'$ South; difference of longitude from the Lizard $30^{\circ} 20'$ East. We have had it cloudy and without sun for several days past, as when we made the island, therefore got neither amplitude nor azimuth, but I judge it to lie in little or no variation, if any thing westerly."

" *Note.* This island is not taken notice of in any of our English or Dutch draughts, believing it was never before discovered by either of them; but I have since, in an old map of the world by *Francis Gualle*, a Spaniard, in the year 1584, found laid down in the same latitude, an island called de Gonzalo Alvarez, but upwards of 10° to the eastward of where we found it, therefore, probably, it may not be the same. This island is much about the height of St. Helena, but I judge not altogether so large; it is rocky all round and seemingly

seemingly barren, appearing inaccessible for boats landing, though smoothest to the S. E. side, where the hills appear greenish, intermixed with shrubs, but no trees to be seen. I imagine it to be steep all round, by the water not being in the least discoloured about it. We had no opportunity of sounding, by reason of the hard squalls we met with to leeward, which likewise prevented sending our boat ashore as intended. At the north end of the island, about two ships length from the shore, stands a high spiring rock, with some small ones about it, which at the first, when you raise it, appears like a sail, but as you advance upon it, has the true resemblance of a small church with a spire: also on the north-west side appear two sugar-loaves, remote from the island, and each other, of a tolerable height. When you come round the south-west part of the island, you will see pouring from the mountains, as before mentioned, two or three large streams of water, appearing fine and clear, and two little rocks, or islands, one of which resembles Egg Island at St. Helena; but on the south-east side no rocks discernible but what are on the shore. As we passed to leeward of it, we saw trunk weeds, some seals, and several birds; some black plump birds like Cape hens, and some white birds with swallow-tails, something smaller than a pigeon, flying very much like swallows, and what I have observed off the Island of St. Paul's; and some of them followed us from the island, of which we took two; they are beautiful, one of a very light ash colour, with a long red bill, black head, red legs and web-footed; the other was spotted like a hawk on the back and wings, with a long black bill, and web-footed, with black legs."

From the Journal of the OSTERLY, March 27th, 1758.

"We sailed upon several courses between E. by S. $\frac{1}{2}$ S. and S. E. by S. to see if we could find a landing place, in order to send a boat on shore, but observed it very steep to the water edge, and a great many rocks a small distance off, with a very great surf, therefore could see no safe place to land our boat. The clouds, all this morning long, have continually hanged over the island, so that we could not see the top of it, being very high, and seeming to be barren; we seeing only a few shrubs, and two rivulets of water. This island lies in latitude $40^{\circ} 19'$ South, per observation, and in longitude $16^{\circ} 25'$ East from Ferro, one of the Canary Isles."

Vessels sailing towards the Cape of Good Hope, will find the variation of the compass, when an azimuth can be taken, of the greatest service in those seas for finding out very nearly their distance from the Cape. The variation increases as you sail eastward, and decreases on the contrary as you sail westward.

THE CAPE OF GOOD HOPE.

D I R E C T I O N S

FOR GOING INTO AND OUT OF

T A B L E B A Y.

THE CAPE of GOOD HOPE, whether you come from the westward or the eastward, has the appearance of a large island, when you are at such a distance as not to be able to discern the connection between the neck of its mountains and the other mountains. All the land about the Cape is very lofty, but the highest and most remarkable is the *Table Land*, a mountain about 3400 feet high, quite level on the top, and falling down perpendicularly at both ends, till it joins with the high lands near it. The east part of the Table Land is connected with a high peaked hill called the *Lion's Head*, or the Devil's Mount, and also Charles' Mount; its west part joins with another hill equally high, which, from its shape, has the name of the *Sugar Loaf*. On the top of this the Dutch hoist a flag when any ships are in sight; and to the north-westward of the Sugar Loaf is another mountain, much inferior in height, and called the *Lion's Rump*, on the top of which a flag is also hoisted. Whenever the Table Land begins to be covered with a cloud, it indicates a strong East or E. S. E. wind, which, soon after the mountain is completely clouded, comes on and blows excessively hard, sometimes 2 or 3 days together; with this wind ships frequently part their cables, or bring both anchors a-head; therefore it is usual as soon as they are moored in the bay to strike their yards and top-masts.

The prevailing winds at the Cape of Good Hope are the S. E. and N. E. winds, the others seldom lasting longer than a few hours. The East and N. E. are less frequent than any. The North and N. W. commonly blow in hurricanes, and bring on foul weather. The S. E. winds blow more or less in almost all the months of the year, but chiefly in the summer, or fair weather season, when they are prevailing also for 200 leagues eastward of the Cape. The summer continues from October to April, then you generally have in the

the mornings regular sea-breezes from S. W. and West, which last till noon, and sometimes longer; they are followed by a S. E. and E. S. E. wind coming off the land; this mostly blows fresh the remaining part of the day, and all night till morning, when the sea-breeze comes off again. In the months of May, June, July, and August, the West and S. W. winds blow strong, being frequently accompanied with fogs and cloudy weather, but they are soon over. Sometimes violent N. W. winds prevail for several days together, and by fits in the other months; the sky at this time is constantly clouded, and they generally end in rain. These winds extend to the 27th degree of latitude South, and from 100 to the westward, to 200 leagues East of the Cape.

The Cape is an excellent place for all kinds of refreshments; and its climate being very wholesome, the sick seamen recover there very soon, especially from the scurvy. Wood is a very scarce and dear article, but there is plenty of good water.

Vessels which intend to touch at the Cape, should take particular care always to make the land to the southward of the entrance of TABLE BAY, and never to the northward, on account of the southerly winds which frequently prevail there, and of the currents that set always to the northward; many ships, for want of this necessary precaution, have been driven towards the Isle of *Dassen*, or *Coney Island*, which lies 5 leagues S. by W. of the Bay of Saldania, and 11 leagues N. W. by N. $\frac{1}{4}$ N. or $\frac{1}{4}$ W. true bearing, from the entrance of Table Bay. This isle is much lower than the Robben, called also *Penguin Island*. It shews breakers which run out near $\frac{1}{2}$ a league into the sea; the anchorage is on the side next to the mainland.

Being off the Cape of Good Hope, you may sail close along shore, and have no danger till you are off Freeman's Point, where there are some rocks, stretching off a small way into the sea. Freeman's Bay is between this point and the sugar loaf hill. You may go within $1\frac{1}{4}$ mile of the point in soundings of 52 and 53 fathoms, sand. Then you steer at the same distance from shore, for Green Point (a low green Point) where you will have from 50 to 48, 40 and 34 fathoms, fine sand and broken shells. Before you come to Green Point you will see *Penguin Island*, a low flat island, on the South of which they hoist a flag when ships are in sight. From the foot of the Sugar Loaf to Green Point several rocks are visible above water, lying at some distance from shore, and there is no hidden danger. Give these rocks a reasonable birth as you run in, and you will shoalen your water gradually from 34 to 30, 26, 20, 16 and 12 fathoms, rocky bottom, so that there is no anchorage there. You may borrow upon Green Point to 10, 9, or 8 fathoms without danger; then steer up the bay, and you will have 8, 7, or 6 fathoms, regular soundings, but rocky, till you get about a mile to the eastward of Green Point, when the bottom becomes sandy and fit for anchorage.

Should it happen, that when a-breast of Green Point, you meet with strong fiery breezes from S. E. or E. S. E. blowing so hard out of the bay that your ship cannot turn to windward, which is frequently the case; then you must bear away for *Penguin Island*,
taking

taking care not to go within 2 miles of its south or west sides, for a ledge of sunken rocks stretches to the West $1\frac{1}{2}$ mile off the south-west end, and a rocky patch, called the *Whale*, even with the water, lies at the same distance to the S. W. of this same end; on both these dangers the sea breaks very high in bad weather, but otherwise they do not appear, and become the more dangerous.

The west side of Table Bay is clear ground all over, but the north-east part is all foul. You may anchor in Table Bay opposite the town, in 7, 6, or 5 fathoms, good holding ground. The best birth in the bay is the house on Penguin Island, bearing N. $\frac{1}{2}$ W. Green Point N. W. $\frac{1}{2}$ N. The flag-staff on the Lion's Rump W. $\frac{1}{2}$ S. and the Lion's Head S. $\frac{1}{2}$ W. in 5 fathoms, distant from the town 1 mile, and from the nearest shore $\frac{1}{2}$ a mile; you have another good birth in $6\frac{1}{2}$ fathoms, about $1\frac{1}{2}$, or 2 cables length farther to the eastward; but as there are vessels almost always lying in this bay, you can be at no loss for finding an anchoring place; ships may anchor on the east side of Penguin Island*, in 12 or 14 fathoms, 1 or $1\frac{1}{2}$ mile off shore, or within $\frac{3}{4}$ of a mile of it in 10 or 11 fathoms; there they are pretty well sheltered from the south-west sea by the rocky ledge mentioned above. They lie at this island until the wind comes to S. W. or West, which generally happens in the morning during the fair season, then they weigh and run to the proper anchorage in Table Bay.

It is extremely dangerous to remain in Table Bay after the 10th or 15th of May, on account of the N. W. winds, then daily expected to set in, and which blow so violently that no ship can possibly ride it out. The Dutch never suffer their ships to lie there after that time.

In sailing out of Table Bay you must always go to the northward of Penguin Island, quite contrary to the directions which have been laid down for entering the bay. Such vessels as, under pretence of a shorter cut, have attempted to sail out by the South channel, have found it so dangerous, that they have been obliged to return, and go through the North channel.

The new moon makes high water at the Cape at $\frac{1}{2}$ past 2 P. M. and the tide seldom rises more than 3 feet, except after a hurricane, or by some extraordinary cause.

* In this island, which is 2 miles long, and about one broad, the Dutch at the Cape banish for a certain number of years their criminals who are not thought worthy of death, and employ them as slaves in digging lime-stone, which, though scarce upon the Continent, is in plenty here; nobody is permitted to land on that island since a Danish ship, which by sickness had lost great part of her crew, and had been refused assistance at the Cape, came down to this island, and sending her boat ashore, secured the guard, and took on board as many of the criminals as she thought proper to navigate her home.

DESCRIPTION OF
F A L S E B A Y,
AND DIRECTIONS FOR SAILING INTO AND OUT OF
SIMON'S, OR SEAMON'S BAY.

FALSE BAY lies at the southern extremity of Africa, between the Cape of Good Hope, that forms its entrance on the west side, and False Cape, or Cape Falso, called sometimes Hottentots Point, which terminates it on the east side. The opening of the bay, from cape to cape, is 5 or 6 leagues, and its extent to the northward above 5 leagues.

From the Cape of Good Hope, as you are sailing northward, you descry a ridge of rugged mountains which end at the entrance of Table Bay. The Table land that faces the road forms a part of them, and is easily discovered in clear weather from the entrance into False Bay. On the east side of the bay, and from the pitch of Cape False, another ridge of mountains stretches out to northward quite to the bottom of the bay, and from thence to N. E. The interval between these two ridges consists of low land; and the mountains you perceive over that low land, are at a great distance in the country.

The *False Cape*, named *Hang-Lip* by the Dutch, on account of the aspect of its mountain, is yet more easily distinguished by its shape, being that of a gun-quin, which it so much resembles as you come from the eastward, that you can never be deceived. South from the Cape Point, which is the southernmost extremity of the peninsula, and about a league from the shore, there lies a large rock at the water's edge, called the *Bellows*, upon which there is a breach, and two miles N. E. of this another rock, under water, called the *Anvil*; there is a passage between these two rocks, with 10 fathoms water in the shoalest part, but it is always much safer to pass at a distance to the southward of them, than to hazard yourself in a narrow channel very little frequented, where the ground is foul, and the current rapid; about $1\frac{1}{2}$ league N. E. easterly from the Bellows Rock, and E. by N. one league from the Cape Point, lies another sunken rock, on which the *Colebrook* East Indiaman was lost on the 24th of August, 1778, and which had not been known before. One mile E. by N. true bearing, off the Colebrook rock, another rock is said to lie,
which

which Captain *Fauconberg*, of the *Steer Schanz*, affirms to have seen several times, although its existence is still denied by the generality of navigators.

Four leagues to northward of Cape Point, within False Bay, and at the foot of the highest mountains on the coast, lies SIMON'S, or SEAMON'S BAY, into which you may put, in that season when Table Bay is unsafe, that is to say, in the months of May, June, July, and August, or when other circumstances render it necessary. Though this place is not more than a large cove sheltered only from the winds between the North and S. E. coming by the West, yet those of the other quarters, which come from the bottom of the bay, or from the mountains bordering the coast, never blow there so strong as to endanger the shipping; so that it may be looked upon as a secure retreat, wherein you may lie sheltered from all winds: besides, at Simon's Bay, you meet with all the supplies which a vessel may need after a long run, or in case of damage in her rigging. The Dutch East India Company keep magazines there of marine stores; and with respect to victualling, and other necessities, you procure them from the Cape Town, which is not above 6 or 7 leagues off, and they are easily brought to you in carts. You may wood and water there as readily as in any port of Europe, and even, in case of necessity, heave down by a hulk.

At a small distance from the south point of this bay, there lies a small island, or rock, in form of a barn, and from its appearance called *Noah's Ark*. N. N. eastward of this, about a mile off, you see a small reef at the water's edge, called *Romans Rocks*. The common passage for vessels lies between these two. At about two leagues E. N. E. of Romans Rocks, are the two Seal Islands surrounded with rocks above and under water, and $3\frac{1}{2}$ miles eastward of these you perceive breakers if the sea runs high.

When you propose to put into Simon's Bay, as you sail in from the westward, after you have had sight of the Cape of Good Hope, and doubled the Bellows rock, you should then steer northward, coasting along shore at a distance of 5 miles, which is far enough in the offing for keeping clear of the Anvil and Colebrook rocks, as well as of the Fauconberg, in case it is not an imaginary rock; with this course you may always find ground proper for anchoring in case you meet with a calm, or any unforeseen shifting of the wind.

In Simon's Bay, 13 or 14 sail of ships may lie moored in safety. The new moon makes high water here at half past 3 P. M. The tide seldom rises more than 3 feet, except after a storm, or some other circumstance. There is no current to be perceived all over the bay; the soundings are also regular, with a clear sandy bottom.

As you draw near Simon's Bay, you will easily distinguish its entrance by the Noah's Ark, which is a smooth and level inland, and at a distance resembles a pontoon; but the most conspicuous mark, and which you discover the farthest off, are those white sand downs appearing like snow in the hollows between the mountains to the N. W. of Noah's Ark, as they are represented in the view of the land taken at K in the plan of False Bay, by Captain *Joseph Huddart*.

You

You may coast along near Noah's Ark, as it is steep to, and has 9 fathoms water close to it, leaving the Romans Rocks to starboard. The depth between Noah's Ark and the Romans Rocks is from 10 to 15, and 16 fathoms water; from this position you should steer for the White Sand Downs quite to the anchorage.

In working into Simon's Bay you may fail on either side of the Romans Rocks, there being a clear channel between the Rocks and Elle Bay, and more convenient with the winds from the north-westward, as it is double in width.

The best station you can lie in, in the Road, is to bring Noah's Ark and the False Cape in one at E. S. E. from true North. The gate of the magazine, which is distinguished from the other buildings by its size and roof, should bear S. S. W. 5° West, and you should lie about 1 mile from shore, the Romans Rocks bearing S. E. $\frac{1}{4}$ E. about 2 miles distant, and the South or East point of Simon's Bay, at the extremity of which many rocks are to be seen, bearing S. E. by S. $\frac{1}{4}$ S. In this birth you have sufficient room, in case of driving, from whatever quarter the winds may happen to come, as you are quite sheltered by the mountains, from those which blow with the greatest violence. If you should be obliged to make a long stay there, you may anchor a little farther within, till False Cape is entirely shut in by the East point of the bay. For mooring into Simon's Bay, says a very experienced commander, bring

Noah's Ark E. S. E. $\frac{1}{4}$ S. or S. E. $\frac{1}{4}$ S. per compass.

Romans Rocks E. by N. northerly, or E. $\frac{1}{4}$ S. ditto.

The Jetty S. S. W. $\frac{1}{4}$ W. or S. W. $\frac{1}{4}$ W. ditto.

You ought to moor your vessel in this road S. E. and N. W. with this particular caution, that from the month of May to September, your stoutest ground-tackle should lie to the N. W. as the winds from that quarter blow the ofteneft, and with the most violence; on the contrary, from September to May you ought to lay to the S. E. because the south-easterly winds are then prevailing. However it is seldom that any vessel goes thither in the latter season, Table Bay being at that time much preferable.

Such vessels as propose to put into Seamon's Bay in their return from the Indies, or China, after having got sight of the coast of Africa, and doubled the False Cape, should steer either for the middle, or for the West side of False Bay, to southward of Seamon's Bay; to gain a convenient anchorage, they ought to keep off the eastern side, where the shore is surrounded with reefs.

As soon as they shall have made the entrance into Simon's Bay, whether by means of the White Sand Downs, already mentioned, or by a sight of Noah's Ark, they should follow the directions already pointed out for sailing to the best anchoring place.

If any unforeseen circumstances should not permit such vessels as desire to put into Simon's Bay, to make the land to eastward of the False Cape, and they should find themselves in the latitude from 25 degrees and $\frac{1}{4}$ to 36 degrees, as soon as they have lost

the muddy bottom on the western part of the bank of Lagullas, they should make good their course N. by W. in order to get sight of the False Cape, or of the Cape of Good Hope.

When they intend to go out of Simon's Bay, they should follow quite the reverse of what has been laid down for entering it. If bound to the eastward, they should leave Simon's Bay as soon as the north-westerly winds begin to blow; on the contrary, if they propose sailing to the westward, they must wait in that case till the north-westerly winds are on their decline, and get under sail in the road as soon as those winds shift from W. N. W. to West; because, as they most commonly veer from thence successively to S. W. to South, and to S. E. they will prove fair for doubling the Cape of Good Hope, and lying up afterwards to N. W.

From the month of October to the month of April, the south-easterly winds, which blow then most frequently, and with their greatest violence, never continue longer than 5 or 6 days together, and are constantly succeeded by variable winds. It happens frequently too in Simon's Bay, as well as in Table Bay, in both seasons, that these same winds, after blowing very hard for a whole day, and part of the night, fall towards morning, and are succeeded by a land-breeze from W. N. W. by the help of which, such vessels as have got under sail at the very beginning of that breeze, may get out of Simon's Bay, and put to sea before the return of the south-easterly wind. At the worst, if they should be taken in such a position as not to be able to double the extreme point of the land, the best and most proper measure to be taken in that case, will be to re-enter the bay.

They may either, in entering, or going out, pass to northward of the Romans Rocks, I mean between the reef and the coast, keeping clear of the rock, which is said to be a little to the N. W. of the Roman Rocks, with 3 or 4 fathoms water on it. This passage, in which you will find from 9 to 10 fathoms water, is twice as wide as that between those rocks and Noah's Ark.

THE CAPE AND BANK OF AGULHAS, OR LAGULLAS*.

INSTRUCTIONS FOR SHIPS BOUND OUTWARDS or HOMEWARDS.

CAPE LAGULLAS lies to the E. S. E. of the extreme point of the Cape of Good Hope, at the distance of about 29 leagues; it is the southernmost land of Africa, in latitude $34^{\circ} 52'$ South. The Cape itself, as well as the land for many miles to the westward of it, is of a moderate height, and can not be seen at more than six leagues from an Indiaman's poop; but about 9 miles W. N. W. from the Cape, the land rises high enough to be seen 9 or 10 leagues off, chiefly its western extremity, which, in some directions, resembles a gunner's quoin; of course this high land is set for Cape Lagullas, by those who pass too far off to see the lower land, as most vessels do. Those who pass it from the westward, with a scant wind to the southward, and only arrive in sight of the high land in the evening, should be aware of this circumstance.

All that part of Africa, of which Cape Lagullas becomes the southernmost point, is surrounded by a bank of soundings, which, after the Cape's name, is called BANK OF LAGULLAS; this bank begins at the 33d degree South latitude, pretty near the coast, and continually increases its breadth to the south-westward, till it exceeds 40 leagues; then extending to the north-westward, it draws progressively nearer to the Cape of Good Hope, where it might be said to terminate. The soundings on this bank, both as to depth and quality, are of the greatest service to navigators, who have remarked, in general, that to the westward of Cape Lagullas the bottom is *mud*, and to the eastward of it *sand*. The small shells, like the husks of oatmeal, being also as peculiar to the East side, as the mud to the West side of the bank. The quality of the bottom, on the South of $35^{\circ} 15'$ (in sight of Cape Lagullas) is classed by some in three divisions, *viz.* Mud, on the West; fine sand mixed with various substances, in the Middle, and coarse sand mixed with coral and stones, on the East. The soundings on the North of $35^{\circ} 15'$ are generally very inconclusive, even with the help of the latitude: you always meet in those parts, with a particular kind of sea fowls called *Gannets*, which are about the size

* This Cape was called by its first discoverers, the Portuguese, *Cabo das Agulhas* (pronounced Agullias), which means the "Cape of the Needles," because, it is said, the magnetic needle had no variation there, at that time. From the Portuguese words our sailors have composed the name of *Lagullas*, which some of them improve into that of *Lagullus*.

of a goose, quite white, with the extremity of the wings tipped with black, and whose flight is but short, greatly resembling that of a pigeon; you also commonly perceive seals swimming on the water; and these, with the change in the colour of the sea, are sure tokens that you are upon the bank.

The *SETTING OF THE CURRENT*, on and off the bank, has been for a long time a subject not fully understood, and many have asserted, that at different times this current did set in contrary directions, in the very same place. Major *Rennel* is the first who, in 1777, explained it in a manner equally ingenious and satisfactory. "It must be observed," says that gentleman, "that the main stream of the current conforms to the direction of the edges of the bank, and not to the shore, as is, I believe, generally imagined; and that before it reaches the great bank, it takes a wide circuit round by the South to the N. N. W. between the point of Natal and Muscle Bay. This winding course of the current, which produces errors of southing and northing alternately in the reckoning, together with the incertitude of the ship's position, has undoubtedly occasioned the above mentioned mistake.

"It is universally allowed that the current runs strongest during the winter months, and all the journals that I have seen confirm this opinion. It is, no doubt, influenced in some degree by the wind, and other causes at all seasons; and the width of the stream may possibly bear a proportion to its velocity. It appears to be from 40 to 50 leagues wide; the widest part being opposite to the river* *Infanta*; and the narrowest on the S. W. side of the bank. On the East side of the bank, and about 50 leagues from Cape Lagullas, where the current again takes a southwardly course, the outer verge of the stream runs into 39° South latitude before it turns to the northward; after which it continues its progress, though slowly, along the Western Coast of Africa, and probably beyond the Line. It is felt in latitude 26° in the track from the Cape to St. Helena.

"There appears to be a slow counter-current setting to South or S. E. about 40 leagues to the westward of the bank.

"There is certainly no considerable current, if any, a few leagues within the verge of the bank; a small drain excepted, and that too near the land to be profited by, during the winter season. This stream appears to follow the direction of the coast as far as Cape Lagullas, where the form of the shore throws it across the bank in a S. S. W. and S. W. direction, until it joins the main stream. Ships are carried some miles to the southward, while they are crossing the stream, which however cannot be many miles in width.

"During the winter months," continues Mr. *Rennel*, "when the westerly winds are so common, the passage round the Cape will be the most speedily effected by keeping the ship in the stream of the current, and letting her drive round the bank. I am aware

* Called Groote River, or Great River, by the Dutch settlers.

that

that most commanders prefer keeping on the bank for the purpose of getting soundings, and in expectation of smoother water, and a stronger current than is to be met with farther out; with respect to the latter, which is undoubtedly the prime object, they are disappointed, as they find a help of about 4 or 5 miles per day only, between Cape Talhado and Cape Lagullas. All the journals that I have examined, tend to establish this fact, of which I had ocular proof during 5 days that I was on the bank. I am indebted to Captain *Wagborn*, late of the *Alburnam*, for the first hint I received concerning the course of the current round the bank. He went round it in the *Liverpool Frigate*, in 1764, and in 5 days had a help of about 160 miles between the meridians of Cape Talhado and False Bay. The alteration of the current from S. W. to N. W. in latitude 37° was so sudden, that it marked the exact time when the ship doubled the point of the bank."

INSTRUCTIONS

FOR SAILING ROUND THE

CAPE OF GOOD HOPE,

TOWARDS

INDIA AND CHINA.

AFTER you have made the Cape of Good Hope, or after you have got soundings on the Bank of Lagullas, if you keep between the parallels of 36 and 38 degrees of latitude, it will be high enough for your meeting with favourable winds. The westerly winds are more certain in a very high latitude than in a lower; they blow very seldom in the former from the North and N. E. and during the months of June, July, and August, scarce continue about 12 or 24 hours; when the wind then at any time veers from E. S. E. to N. E. you must expect it in a few hours at N. W. In all other months westerly winds are more frequent than in shore.

The winds from N. W. to W. S. W. are those which occasion the highest seas to the eastward, as well as to the westward of the Cape; though they do not blow with their greatest force but during the months of June, July, and August, yet it sometimes happens that in April or May you meet with very violent squalls from that quarter.

These are generally foreseen by black clouds, which darken the horizon from N. W.

to

to West, and as soon as you see these tokens you must prepare yourself, for they come on rapidly, and are sometimes accompanied with whirlwinds. They begin to blow violently from W. N. W. to West, then shifting with fury to the S. W. they get to South, when the wind abates, and it falls calm all on a sudden; but the sea, agitated and swelled into mountains by the boisterous winds, is not so soon composed, and this is frequently of worse consequence than the gale itself.

About 150 leagues to the eastward of the Cape, these storms are very frequent; the atmosphere is almost always on fire with lightning and thunder, followed by deluges of rain, so that you scarce ever enjoy two fair days together. The weather is thus tempestuous while you are sailing above 300 leagues farther; and several navigators have remarked that it continues quite to that meridian which passes through the eastern part of Madagascar.

The course you are to take eastward, after doubling the Cape, on the parallels above mentioned, ought to be always in proportion to the distance of the places to which you are bound, so that when you leave the westerly winds, those from the S. E. and E. S. E. which you will meet with afterwards, might be fair winds for the course you intend to steer.

Ships bound to the INNER PASSAGE steer in the parallel of 36° latitude, till they have made 12 degrees longitude East from Cape Lagullas; then they make some northing, but with caution. Hereabout the strong westerly and N. W. winds, that you had off the Cape, begin to moderate; they become variable, and are frequently S. S. W. and sometimes S. E.

Ships which prefer the OUTWARD PASSAGE, steer in the parallels of latitude from 37° to 40° where they meet with strong gales from W. S. W. to S. S. W. and N. W.

Ships bound to BOTANY BAY may continue steering to the eastward, in the above latitudes (and, if they choose, make the island of St. Paul, or Amsterdam) until they come near the coast of New Holland, when they must haul more southerly, and gather into the latitude of the South Cape in New South Wales; and having rounded the above Cape, they steer to the northward for Botany Bay.

Observations of the variations of the Needle are equally useful in the seas to the eastward, as in those to the westward of the Cape. The declinations from the North Pole of the World, seem to keep respectively so exact a proportion to each other, that when you sail from West to East, or from East to West, you may look upon them as the means of correcting your reckoning; for this reason no opportunity should be neglected, nor any means left untried, for finding them with exactness; the observation must be always made with a good instrument, and when the motion of the ship is not too violent. As you sail to the eastward it increases progressively as far as 27° West; and, according to the best observations, the variation is found to be greater to the southward than in the middle of the Inner Passage.

ISLANDS AND DANGERS

TO THE

SOUTHWARD AND TO THE EASTWARD

OF THE

CAPE OF GOOD HOPE.

IN the parallel of 41 degrees South, about $21^{\circ} 30'$ East of London, the two little islands of DENIA and MARSEVEEN appear in the charts at a little distance from each other. They are inserted by Dr. *Halley* in his Variation chart; and *Van Keulen* says they have been seen by the Dutch Company's ships, but he gives no circumstances.

Mr. *Dalrymple* doubts of their existence, as islands of ice have been seen sometimes, though rarely, by our ships in doubling the Cape; particularly in the latitude of $35^{\circ} 55'$ South by Captain *Pitt*, in the *Stanhope*, 1727. "I mention this instance," adds Mr. *Dalrymple*, "as I have seen a memorandum of an island discovered there, which, upon examining the journal, I found was only an island of ice." It should seem however, by the track of Messrs. *Marion* and *Crozet*, to New Zealand, in January, 1772, as it is laid down in the *Duke de Croy's* map, that the islands, Denia and Marseveen, are not imaginary.

About 85 leagues S. by E. from Cape Lagullas, lies a SHOAL, discovered by the French Brigantine, *TELEMAQUE*, Captain *Geraud*, who sailed from the Cape to Madras the 22d of January, 1786, and arrived at Madras the 17th of May following. Two accounts are given of this shoal, one by the English passengers on board the ship, and the other by the French Commander. Mr. *Petrie*, to whom we are indebted for both accounts, has found by working the French brig's log, that the true latitude of this shoal ought to be $38^{\circ} 50'$ instead of $38^{\circ} 11'$ in which it has been made to lie, and its longitude $22^{\circ} 2'$ East of London. "In my questions to the passengers," says Mr. *Petrie*, "I was particularly attentive to ascertain positively the existence of such a shoal, beyond all probability of doubt; and I venture, from their answers, descriptions of what I saw, and explanations, to affirm that a very alarming and dangerous shoal lies off the bank of Agullas to the southward, and some degrees to the eastward of the Cape of Good Hope, rendered more dangerous

dangerous from its being in the common track of ships going the Outward Passage to India. It is no improbable conjecture to suppose, that this shoal has proved fatal to some of those vessels which have perished in the voyage to India, and which have never yet been heard of. I repeatedly asked the passengers if they thought it was possible that they might have been deceived by the shade of a cloud, or by a particular appearance in the sea; they agreed that, as far as they could trust the evidence of their eye-sight to a very near, conspicuous and distinct object, they could not be deceived; they not only saw green moss and grass upon the rock, but in some places the bare rock perfectly distinct, and plain on both sides the vessel; and one of the passengers said, he was perfectly convinced, that the depth of water, in some parts of the rock, was not more than 2 fathoms. After this danger they did not venture into a higher latitude than 35° , in consequence of which they experienced a long continuance of bad weather, hard gales at East and S. E. and very high seas. They were 50 days in running down their coasting, and from the 22d of January to the 17th of May, from the Cape of Good Hope to Madras."—N. B. "In February, 1744, the *Orford*, Captain *Edmund Smith*, in the passage from St. Helena to Bencoolen, sailed through green water, and passed in the night what appeared to be a shoal, not far remote from the Telemaque's Shoal."

To the eastward of the Telemaque's Shoal, lies another called the *Slot Van Capelle*, or the DUTCH SHOAL, whose existence is very well ascertained; but from the variety of reports, both Dutch and English, its longitude appears to be very little known, though it is generally placed between 38° and 39° East of London. The author of the *Neptune Oriental*, who has first mentioned this shoal with some detail in the first edition of his work, speaks of it thus: "The Bank, which I have laid down to the southward of Mozambique Channel, was discovered in 1748, by a Dutch East India ship, called *Sout Van Capel*, in her passage from the Cape to the Isle of France, in $37^{\circ} 20'$ latitude South, and about $20^{\circ} 20'$ to the eastward of the Cape of Good Hope. This vessel coasted along it one whole day, and remarks that it extends about 26 leagues from East to West, and from 13 to 14 leagues North and South. I have passed both to northward and southward of this shoal, but at so great a distance as not to be able to get any knowledge of it. I, as well as many other navigators, have remarked only that in this track the sea tossed very much, and that the waves were very short and cockling."

This account is confirmed by Captain *Francis Fowler*, who being at Prince's Island in 1748, was told by Captain *Jacob Bows*, Commander of the Dutch ship the *Slot Van Capelle*, that in his outward bound passage, he saw breakers that ran very high; it blowing fresh he brought to, founded, and had 60 fathoms water; he was then, by a good observation with Hadley's quadrant, in $38^{\circ} 24'$ latitude, and $20^{\circ} 20'$ East from the Cape.

At the distance of about 80 leagues to the north-westward of the Dutch shoal, and in $33^{\circ} 44'$, another shoal, or rock, is mentioned to have been seen the 6th of October,

1765,

1765, by Captain *Baddison*, of the *Princess Augusta*: this, however, might have been nothing else but the back of a whale, as were those rocks seen in 1780, by the *Contractor* and the *Ponborne*, in $38^{\circ} 0'$ latitude, and $31^{\circ} 38'$ East longitude; or the reflection of the moon, as was the Sand seen in 1780, by the *Glatton*, in $35^{\circ} 58'$ latitude, and $43^{\circ} 13'$ longitude East of London. See Mr. *Dalrymple's* Memoir—page 14. and seq.

OUTWARD PASSAGE.

DIRECTIONS

For the Passage to the ISLES of St. PAUL and AMSTERDAM.

SHIPS going to India, or China, early in the season, and which are to pass the meridian of the Cape of Good Hope in the months of March or April, must not approach the Cape, for at this time of the year the S. E. wind is prevailing there, as well as along the coast to the eastward of it, and frequently blows pretty strong. They ought to keep to the southward, in latitude 39° or 40° , where, as it has already been observed, they are sure of finding steady gales from W. S. W.—S. W. and N. W. by the help of which they will quickly run down their easting. In this passage, before they come to the meridian of the Cape, they may happen to see the Isles of Tristan da Cunha, or Gough's Island. They must keep constantly in the high latitude, above said, till they approach the Isles of St. Paul and Amsterdam.

Ships outward bound for this passage, which are in soundings off Cape Lagullas, in May, June, July, or August, may come into $37^{\circ} 30'$ latitude, which is high enough to run down their easting. In this latitude they will have also strong gales from W. S. W. to S. S. W. and N. W. (as we have already said) and in sailing to the eastward, they will find but very little alteration in the variation for several degrees.

If you intend to make the Island of St. Paul, you must keep in the parallel of $37^{\circ} 20'$ or $37^{\circ} 30'$ South; it will carry you clear to the northward, and fairly in sight of it; your reckoning may be corrected by the variation found off this island, or that of Amsterdam, without seeing either of them, allowing the variation to be 19° or 20° West; at or near these islands you may reckon yourself, when in their latitude with this variation, to be also

in their meridian; and from thence you can proceed for the Straits you intend to pass, either to the eastward or to the westward of Java.

THE ISLES OF ST. PAUL AND OF AMSTERDAM.

THE ISLE of St. PAUL, called *Amsterdam* by the Dutch, is the northernmost and smallest of the two; it can be seen 12 leagues off in clear weather, and is described thus by Mr. *John Wane*, Midshipman on board the *Morse Indiaman*, in 1770.

" This island, at the distance of 3 or 4 miles, appears to be small, and of a moderate height, but on a nearer approach, the fog clearing away, we observed it to be very high land of a pyramidal shape, and about 12 miles in circumference. Ships that go the outward passage to India, mostly make St. Paul, but seldom see the height of it, on account of the weather being generally hazy. The *Morse* sent her boat on shore to inspect into the island, in which I went, and to the best of my remembrance, the particulars are as follows: We sailed round the island, but found no place to land on account of the rocks, which are almost perpendicular, and rather inclining over the sea, and at a great height above the surface of the water. There are a great number of these extending round it, for the space of a $\frac{1}{4}$ of a mile, and about 2 feet water on them. You have soundings off the island, but very uneven, except on the north part, where they are more regular, and free from rocks. Ships may anchor there in 7 fathoms, sandy ground, distant off the rocks 1 mile, but not with safety, as there is a large swell, and generally blowing hard. On the south part of the island we observed a ship's keel and a top-mast, both very large; we could not go to examine it, but we imagined it to be the wreck of a Dutch ship. We came to a grapnel, to leeward of the island, with a determination to land, if possible, and after several attempts, we succeeded, but with great difficulty and danger. The method of our landing was thus: one of the crew swam ashore, and after many efforts, being beat off several times by seas, he ascended the rocks; this man carried the end of a deep sea-line with him, the other end being made fast to a rope which he hauled ashore; this secured our landing, which we could not otherwise have effected. We took a general view of the place, and found it to be a light sandy soil, which produces high grass and shrubs, with which the whole island is covered. About $\frac{1}{4}$ a mile inland, there is a small drain of water issuing out of a rock, which, by estimation, might fill a butt in 12 hours, and this was the only spring of water we found; we saw a small quadruped of the size and shape of a goat, spotted, and without horns; but we could not discover the least appearance of any of the human species being there. The coast of the island abounds with seals of an enormous size, and with rock-cod, which we caught in great plenty. We carried on shore sheep, goats, and fowls, male and female of each, and left them to propagate."

The **Isle of Amsterdam** (which is the *St. Paul*, or *St. Paulo* of the Dutch) is about 7 or 8 leagues distant to the southward of English *St. Paul*; it lies N. W. and S. E. being 8 or 10 miles in length, and 4 or 5 in breadth; it is pretty high land; the south-west point falls gradually from the summit of the island until it comes to about 20 feet above the water, and then chops down at once. When you come to open the east part of the island towards the North, it makes in two bold headlands, betwixt which seems to be a deep valley, and to the eastward of the two headlands, at a small distance in the sea, stands a very remarkable rock, about 80 or 90 feet high, and in the shape of a nine-pin, round about which are a parcel of low rocks. The north-east point makes in a low slip of land, falling gradually quite down to the water's edge, not unlike the Bill of Portland. If you avoid the west part of the island you will find all the rest safe, and you may go close to it without fear; on the north side there is no ground, it is all rocky with a heavy swell rolling in from the sea; on that side you see a fall of water.

The Dutch, who have landed on this island at different times, found it so covered with wood, rushes, and thick canes, entangled together, that one could not, in a day, go 4 miles, being obliged to creep under the shrubs, and clamber over the trees, which stand close together, some of them being as thick as a man's waist. The soil is, in general, a fenny land about 3 feet thick, and under it are stones like burnt pumice; it is also very loose, and the trees not getting sufficient root in the ground, do not grow high. The Dutch saw there neither man nor beast, but only some birds like sparrows; one of their people indeed saw, as he thought, a quadruped like a weasel, and another like a fox. They found some vegetables, as wild celery, good to eat; climbing up a hill, good fresh water was discovered, but they were obliged to carry it down in small casks from the top of that hill. They could see over the whole island, which appeared all round, very steep, and every where clear, but having no place to anchor, or come at, except where they lay, where there is as good lying as at the Cape, without any swell. This anchorage was at a scant musket shot from the shore, the island bearing West.

They found also a lagoon, where they caught many small fish; the adjoining ground was very hot, and out of it the water issued boiling hot; they made holes for this boiling water, and dressed and cooked their fish in it; they discovered several of these hot springs in the island, which, in some places, were so situated, that the fish caught in the cold water, and fastened to the hook, might be instantly thrown into the hot spring and boiled*. All about the island they found the sea so full of seals and sea lions, some of them at least 18 feet long, that they were obliged to kill them to get a passage through, when they steered for the shore; there was also an astonishing number of fish, some like large stone breams; in four hours time they caught with the hook 436 large fish, like small cod, besides many lobsters.

* This island is evidently volcanic, as are almost all those small and high islands, scattered in the Ocean.

Observe, that before you make Amsterdam, you will see several albatrosses, cape-hens, silver-birds, and seals about the ship, and you generally meet with a good deal of rock-weed when you have made the island.

The exactness of the description made by the Dutch of this island, has been confirmed by Mr. *John Henry Cox*, who was there in 1789. This gentleman anchored on the south side of the island, in 20 fathoms, black sand like wet gun-powder, in the same spot that *Vlamming* the Dutchman did in 1697. "On the 31st of May," says his journal, "we hoisted out our boats and rowed towards the shore (abreast the ship), which here forms a sort of causeway of large clean pebbles, that has the appearance of being raised by art; in the middle of this causeway, we saw an opening in which a great many seals were playing, about a pistol shot wide, into a basin or lake; we rowed for this entrance, and found a strong tide, at least $2\frac{1}{2}$ knots, running out, and with some difficulty, it being nearly $\frac{1}{2}$ ebb, got the cutter over the bar which is formed of loose pebbles; we were then in deep water, and smooth as a mill-pond, though the sea ran very high without; we landed on the north side of the entrance, where we found seals innumerable; after killing a great number we went in search of fresh water, and for that purpose began to ascend the only accessible part of the hill; up a considerable way the seals had formed a good path, but beyond this we found the ascent obstructed by large tufts of coarse grass, which, in *Vlamming's* time were 8 or 9 feet asunder, but were now close together, so that we were obliged to return, though it must have been on these heights that he found water: indeed had we reached the top, and found water, though it might have supplied present expenditure, and in that light would be valuable to a vessel that made any stay here, it would be endless work to attempt watering a ship from hence.

"Sent the cutter ashore sealing; rowed round the basin, which is between 2 and 3 miles in circuit; found 29 fathoms in the middle, and 27 and 28 within 150 yards of the shore, close to, 7 and 8 fathoms. The land round the basin is table land, rising in some places almost perpendicularly from the border of the basin, and covered with grass, which gives it a pleasant appearance. As we rowed round, we saw smoke rising amongst the stones, in several places close to the basin; we landed and found the water so hot, that we could not bear our hands in it. I had a pocket thermometer with me, which, in the open air, stood at 62° , but when put into the water, at 190° , and then, in about a minute, fell to 185° . Our people, who were ashore sealing, constantly boiled their dinner of fish in some of those springs, which are in all parts close to the basin.

"June the 5th, in the afternoon, blowing very hard from N. E. with a great sea, determined to put to sea, and run down under the lee of the island; at 5 got a spring on our cable to cast, cut the cable close to the splice, and went to sea. We lay in a very good birth to clear the island on either side, but it would be safer for a large ship to lie about two cables length farther to the eastward, and upon appearance of blowing weather from
the

the eastward, to go to sea immediately, and run to leeward of the island, where she would find smooth water; and as the easterly wind is never of long continuance, she would be sure of soon regaining the anchorage.

" We killed, during our stay here, 1200 seals, and could we have staid, might have got as many thousands. We had constantly many whales playing about the ship, so that it was sometimes difficult to steer clear of them in rowing ashore; several of our people who had been in Greenland, said they were the spermaceti whale.

" The fish we caught on board were chiefly a sort of bream, striped like mackarel, and of these we caught so many the first day, that, besides salting and pickling several barrels, we threw some hundreds over-board; we caught also some mud-cod and barracoutas. It may be proper to observe, that the instant the fish are caught, they should be gutted and salted; in particular not exposed to rain, which prevents their taking the salt, as we found to our cost, for several barrels full, which had lain in the rain before they were salted and packed, turned out on inspection good for nothing.

" We found the tide rise and fall about 2 feet 8 inches, or 3 feet. The flood I think comes from the northward, and it is high water on the full and change, about 10 h. 45 m. or 11 o'clock."

The variation at Amsterdam has been observed to be westerly, as follows, viz. $17^{\circ} 35'$ in 1747, $18^{\circ} 45'$ in 1764, 20° in 1774, and by Mr. Cox $19^{\circ} 45'$ in 1789.

The longitude of Amsterdam is about $77^{\circ} 22'$ East of London, according to a very good observation made by Captain *Bligh*, of the *Bounty*, in her passage to Otaheite; and its latitude $38^{\circ} 42'$ South.

D I R E C T I O N S

FOR THE PASSAGE FROM THE PARALLEL OF ST. PAUL AND AMSTERDAM,

OR FROM THOSE ISLANDS TO JAVA HEAD;

AND FOR THE PASSAGE OF THE STRAITS EASTWARD OF JAVA TO CHINA.

ACCOUNT OF THE PREVAILING WINDS, &c.

IF you are bound to India, or to the Straits of Sunda, from the Cape of Good Hope, in the latter part of the season, as in September, or at any time between September and April, it is not absolutely necessary you should have a sight of either St. Paul or Amsterdam, provided you ascertain your longitude by means of your variation. Being in the parallel of 37° , or $37^{\circ} 30'$ South, about $61^{\circ} 30'$ East of the Cape, which is the meridian assigned to St. Paul, you steer in the same latitude 8 or 10 degrees eastward, before you edge away to the northward, though so much easting is not required for ships which are bound to India; they may, in the longitude above said, run down their easting and northing together, and will see their variation decreasing very fast as they advance to the northward.

The parallel between 37° and 38° is the best to keep in, the winds being there, in general, westerly, with fresh gales; and before you have made the longitude above prescribed, that is about 88° or 89° East of London, if a change of these winds should oppose your course to the eastward, it will be proper not to pass the latitude of 35° South, on account of the winds you should find there from North to East. Several ships, for want of this precaution, have lost a great deal of time in beating to windward, and at last have been obliged to run to the southward as far as 40° latitude South, to regain the westerly winds.

In the Indian ocean, between the Cape of Good Hope, and the land of Endracht in New Holland, to the southward of the 25th degree of south latitude, the winds blow from the westward most part of the year; except in January, February, and March, near the Cape, or about 200 leagues from the east and west Coasts, where they come oftner from the eastward than from the westward.

Between the 35th and 25th parallels of south latitude, you meet with variable winds,
but

but beyond these parallels, as far as the 12th South, they come from the S. E. without any considerable interruption. They are usually called *General Winds*, because they blow thus, not only in the Indian ocean, but also in the other southern seas; only in those seas their power extends as far as the Equator, whereas in the Indian ocean they seem confined between the parallel of 28° and 12° south latitude.

From the 12th degree of latitude South to the Equator, the winds divide the year into two seasons, or *Monsoons*, blowing about 6 months one way, and 6 the other. Although this difference is the same throughout the Indian seas, yet the winds have a contrary direction at the same time; and while the eastern monsoon is prevailing in the northern hemisphere, the western blows in the southern. The eastern monsoon begins to the southward of the Equinoctial in April, and continues until November; the western succeeds, and continues until April; the months of April and November, in which the monsoons break up, are subject to variable winds, but they do not change suddenly.

Ships going to India in the months of November, December, January, February, and frequently in March, will meet with fresh gales of wind from S. W. to N. W. from the 12° latitude South to the Line, and squally weather with much rain; in this track their easting may be run down very fast, but they should take care to do so before they cross the Line, for as soon as they get into north latitude, they lose the fresh westerly winds; and in latitude 1° North they will meet the N. E. monsoon, which blows constantly in the Indian seas, from October to April, between N. E. by N. and E. N. E..

In this season a ship must endeavour to keep as far to the eastward as Acheen Head, let her be bound to what part of India she pleases; if to Bengal let her keep to the East of the Nicobar and Andaman Islands, and along the Aracan shore until she can stretch over to Balafore Road; and if bound to Madras, she may sail across the bay from Acheen Head, and fetch her port; taking care to fall well to the northward of it, on account of the winds, which are for the most part northerly, and of the current which runs strong to the southward.

If you are bound to the coast of Malabar, being off Acheen Head, you must steer for Ceylon, and take care to fall in with that island about the Friar's Hood, or the Great Bassas; then you are to keep the coast close aboard, and come round by Ponta de Gall, observing to keep in soundings, so that in calms, or contrary winds, you should be able to anchor, by which means you will prevent your being driven off by the strong S. W. currents.

When you have made about 88 or 89 degrees longitude East of London, being bound to the west side of Java, you edge away by degrees to the northward, in such a manner as to be able to pass the Tropic of Capricorn in 101, or 102 degrees East of London; being under the Tropic in the latter longitude, you will find yourself about 50 leagues to the W. S. W. of the Tryal Rocks, and 3 degrees farther North, that is in $20^{\circ} 30'$, you will be in their parallel; prudence requires that you should pass the latitude of those

those shoals in the day time, because you may fall on them in the night, when you reckon yourself at a great distance in the offing.

In this run you might see likewise, if it was in existence, the island called Cloates Island by the French, of which we shall speak hereafter, as well as of the Coco Islands, and of Christmas Isle to the eastward of these.

Having passed the parallel of the Tryal Rocks, you must continue your course within sight of Java: in latitude 10° South, and longitude made from St. Paul 33° East, you have $2^{\circ} 30'$ west variation; with this you will make the land in latitude $8^{\circ} 16'$ South, 20 or 25 leagues to the eastward of Java Head. All ships bound to the Straits of Sunda, between the months of March and September, should take care to fall in with the land to the eastward of that headland, and, for want of proper attention to the variation, several which have gone to the westward of it, have been obliged to go through the Straits of Malacca. But we must insert here the case of Captain *George Richardson*, of the ship *Pigot*, December, 1771, and the caution given by that gentleman.

"In running down from St. Paul's towards Java Head, from the month of September to the month of March, you ought not to fall in to the eastward of Java Head, because, in those months, you will find it difficult to get to the westward, for on the south Coast of Java the winds blow then constantly from the N. W. to West, with a strong current setting to the eastward. Our Company's instructions particularly desire you not to fall in to the leeward, that is, to the westward, without specifying the different times of the year; this led me into an error of falling 5 degrees to the eastward of Java Head, by which I was six weeks after making the land until I got into the Straits, being obliged to stand to the southward into the trade-wind, to run down my westing. In this course I made Christmas Island, at which I was desirous of anchoring, and where I convinced myself there was no anchorage; I then stood away to the northward, but was again hurled by the currents 20 leagues to the eastward of Java, which obliged me a second time to stand to the southward; and this time I ran by my reckoning, 45 leagues to the westward of Java Head before I hauled to the northward; and was 23 leagues to the westward, by my reckoning, when I made Java Head. This was in the month of December, so that all ships bound to Batavia, at this season of the year, ought to endeavour to make the Island Engano, as the Dutch ships always do, who are generally late in the season.

If bound to Bencoolen, you ought, at this season of the year, to make the Pogy, or Nassau Islands; but in the S. E. Monsoon you should fall in to the eastward of Java Head, and then you will have a commanding wind to Bencoolen."

A N. E. $\frac{1}{2}$ E. and N. E. by N. course from the parallel of the Tryal Rocks, will enable you to make the land about 50 leagues to the eastward of the Straits of Sunda, such a distance being sufficient to prevent any mistake to the westward. In following these directions you generally find the error on the other side, and fall in with the land farther to the eastward than your reckoning, as it is confirmed by several journals; but

but observe, at the same time, that it might become dangerous to run too far to the eastward, on account of the difficulty you have to get out of the bays formed by the coasts of New Holland and the islands to the East of Java, wherein you often meet with calms and rapid currents. After all the necessary precautions, if you should find yourself in $7^{\circ} 30'$ South, and not see the land, haul upon the wind to get to the eastward until within sight of it. When you approach the south part of the coast of Java, you will see drifts of bamboos, and a great number of birds like boobies, but there is no judging with certainty, for want of good marks, of your distance from the Straits of Sunda; all we can say is, that the land near the shore is generally woody, with several bays and rocks bordering the coast, which seem to render the landing dangerous, nor is the bottom proper for anchoring, except very near the shore. The inland part is covered with high mountains, especially the east side, where they are very craggy.

When you are about 4 or 5 leagues off this coast, you are to sail along it; it lies in general about E. by S. and W. by N. as far as *Winerow Point*, or *Wine Cup Point*, where it seems to terminate, when you come from the eastward; the point, which is low and covered with trees, is easily distinguished by these, as well as by the double land near the shore that lowers towards it; its extremity is marked by a little sandy island close to the water's edge, and in this part the coast is lined with breakers near one mile off.

From Winerow Point the coast lies N. by E. in a space of 3 leagues, and after forming a bay to the eastward, it trenches away to W. by N. as far as the entrance of the Straits of Sunda. In this latter part, about 2 leagues off shore, lies a small low island covered with trees, called by the Dutch, Trouwers Island; and $3\frac{1}{2}$ leagues W. by S. from this you meet with Claps's Island, called also Breakers Island, which is low and woody like the former; thereabout you may anchor in 25 or 30 fathoms.

Being past Winerow Point steer W. N. W. towards Claps's Island, from which you bear thus about 20 leagues; as you near it, you may perceive to the north-westward JAVA HEAD (the westernmost point of the Isle of Java, and the southernmost of the Straits of Sunda), on which there is a hill of a moderate height, whose west end lowers more suddenly than the other. To the eastward of this hill, there is another very much like it in shape and height; between the two the land is low and covered with trees; if you come from seaward, and are too far to perceive the latter, the westernmost hill appears like an island, and when you raise the easternmost, the space between them seems to form the entrance of the Straits; then the trees appear, and the low land which unites them.

It is about 7 leagues N. W. by W. from Claps's island to Java Head, which seems to terminate very bluff, it being on a great rock, separated from the foot of the hill, with which it appears confounded. Coming from the southward there are some other little rocks above water, less than a mile off shore; and to the south-eastward thereof a reef upon which the sea breaks.

Ships which are bound to China through any of the Straits that lie to the eastward of Java, ought to make the islands of St. Paul or Amsterdam.

From these islands, or from 20° west variation, in case you have not seen them, a ship may run 17° or 18° to the eastward, before she lowers her latitude under 35° South; and then being careful not to go under the latitude of 26° South, until she reduces the variation to 7° West, she will make the coast between $22^{\circ} 30'$ and 25° South, with $5^{\circ} 20'$ west variation, having constantly the strictest regard to the variation. In this run you must take care of the Danish Rock.

Off the coast of New Holland, between the 28th and 29th degree of latitude, lies a very dangerous shoal, called Houtman's Abrolhos; to avoid which this land is not to be made to the southward of 26° or $26^{\circ} 30'$ South latitude; when you make it in 25 degrees, you fall in with DIRK HARTOG'S ROAD, on the outside of the bay which was called by *Dampier*, SHARKS BAY. There the coast is clean, with good soundings in the offing; this road is also spacious, good, and easy of access, but nothing is to be got there, the country being very sandy and barren, without water and inhabitants. When you attempt to make the land about 22° you must be very careful of Cloates island, which lies not very far from the coast; you will observe also, that between the 22° and 23° of latitude, the north part of the coast is high land, and the south part low land with a beach; the soundings are 130 fathoms, mud, 14 leagues off.

In approaching the coast of New Holland, you have many tokens which never fail, as great quantities of skuttle-bones, weeds and drifts; and nearer the coasts grampuses playing like seals, with an amazing number of tropic-birds; but skuttle-fish and weeds are generally the first marks.

A ship bound to one of the Straits, eastward of Java, must necessarily make the coast of New Holland; and taking her departure from it in latitude 20° South, or thereabout, she is to steer north-eastward: if you intend to go through the *Straits of Bally*, your principal care must be to secure the land-fall from New Holland, for should you fall but 10 leagues to leeward, it would be very difficult, not to say impracticable, to beat up, because the current and winds set hereabouts as the shore lies. The entrance of these Straits is easily known by the draught, as well as by the views of the hills.

If you are bound to the Straits of *Lombock*, or those of *Alafs*, or of *Sapy*, you are to make, with due caution, the coast of Cumbava, a land very remarkable by its height and ruggedness. The Isle of Lombock is distinguished likewise by a very high peak, which is better descried through the Straits of *Alafs*, being nearer that side; betwixt these two Straits, the shore for the most part is a sandy beach, lined with several large straggling rocks, and one large inlet or river.

Mr. *George Robertsen*, treating of this passage in his *Memoir of a Chart of the China Sea*, makes the following pertinent remark.—P. 85.

“ I cannot help,” says that able navigator, “ taking notice of errors and inconsistencies

set forth in the *India Directory*, p. 18, of *Nichelson's Observations*." He remarks, that ships bound to these Straits, should take their departure from New Holland in latitude 19° South, or thereabouts.

"In answer to this, it appears the west coast of New Holland does not extend farther North than $21^{\circ} 6'$ South, an error of 46 miles in point of latitude.

"In the next place he advises making the coast of Cumbava *to the eastward of the Straits of Araf*, without a single caution respecting the easterly or westerly Monsoon, both of which in this place ought to be very particularly attended to; as the falling to the leeward of your intended track will inevitably frustrate your intention, it being hardly ever possible to regain your situation to windward, although, perhaps, there is only a few miles wanting. I would, therefore, advise ships, that intend going through these Straits, after taking their departure from New Holland, always to allow from 10 to 15 leagues to the windward of their intended destination."

DANGERS TO THE EASTWARD AND NORTH-EASTWARD OF THE ISLES OF ST. PAUL AND AMSTERDAM;

CLOATES ISLAND,—THE DANISH ROCK,—HOUTMAN'S AB-
ROLHOS,—THE TRYAL ROCKS,—COCO ISLANDS, OR KEELING
ISLANDS, AND CHRISTMAS ISLAND.

CLOATES ISLAND was discovered in 1719, by Captain *Nash* of the Imperial Ship, *The House of Austria*, bound from Ostend to China, who gave it that name in honour of a Flemish Nobleman, one of his owners. Captain *Nash* saw it first at 3 A. M. the weather being very clear, on which he immediately brought to and founded, but had no ground at 100 fathoms, though not above 4 miles, and according to some accounts, not above 2 miles off shore*. The day before, and several days after, they observed an incredible quantity of sea-weeds (like those from the Gulf of Florida), and small birds like lap-

* The island now called by the name of *Cloates*, must have been known long before Captain *Nash* saw it. The Chart of *Seller*, published in the beginning of this century, lays down an anonymous island to the S. W. of the Tryal Rocks, which appears to be Cloates Island.

wings, both in size and in flight. Cloates island has been seen likewise by the *Haefling field*, in 1743; she saw it at day-light, bearing from S. E. $\frac{1}{2}$ S. to E. by S. distant about 6 leagues. According to the description of both ships, the island is about 8 or 10 leagues in length, lying N. E. by N. and S. W. by S. It is of a moderate height, and pretty level, with a gradual slope at both ends, and tremendous breakers running from each of them, about 3 miles into the sea. It cannot be seen at a great distance, even in clear weather.

Captain *Nash* found Cloates Island to lie in 22° latitude South, and in 92° east longitude from the Cape of Good Hope; the variation $6^{\circ} 30'$ westerly; thence he made $3^{\circ} 6'$ easting to the island of Bally, and $7^{\circ} 26'$ westing to Java Head.

By the *Haefling field's* account this island lies in $22^{\circ} 7'$ latitude South, and $37^{\circ} 49'$ east longitude from Cape Lagullas. Their variation the morning before was $6^{\circ} 17'$ westerly. They steered from it, nearly North, for 7 days, when they made the land of Java in the latitude of $8^{\circ} 30'$; and in three days and half more made Java Head in $7^{\circ} 12'$ west longitude from Cloates island.

From the difference between the two accounts, which amounts to about 7° degrees in their longitude from the Cape, the position of Cloates Island is far from being ascertained; but as the ships, *House of Austria*, and *Haefling field*, agree better in their run from thence to Java Head, it has given some means, at least, of assigning a probable situation to this island. Captain *Vincent* is of opinion, that it does not lie much above 30 leagues from the coast of New Holland, while other navigators, equally judicious, remove it 50 leagues farther to the West. Some French charts, not thinking this distance sufficient, have placed Cloates Island 300 leagues westward of New Holland. A view of this island given in one of them has the following remark, viz. "Isle Cloates, or Clouts, in $22^{\circ} 0'$ latitude South, and $93^{\circ} 10'$ longitude East from Paris, according to Mess. *De la Caille* and *D'Après*. Variation 7° West." This longitude places Cloates island in $95^{\circ} 35'$ East of London, and about 77° East from the Cape of Good Hope, which is 15° less than the longitude made by Captain *Nash*, and about 9° less than the longitude made by the *Haefling field*; therefore the French remark, founded upon a mistake, is describing an imaginary island of Cloates.

In $28^{\circ} 20'$ latitude South, and about $98^{\circ} 30'$ east longitude from London, lies a dangerous rock just above the water, and about a cable's length. It is called the DANISH ROCK, from having been discovered the 17th of June, 1774, by a Danish ship, which sounded near it, and had no ground at 120 fathoms. In the parallel of this rock, and at the distance of 200 leagues to the East lie

HOUTMAN'S ABROLHOS, OR SHOALS, between the 28° and 29° South latitude, and near the coast of New Holland, as we have already observed, page 66. These are the shoals whereon the ships *Zeeuyk*, in 1627, and *Batavia*, in 1628, were lost. The crew of the *Zeeuyk* found them to consist of 10 or 12 sandy islands, all around joined to each other by reefs, and about 32 or 36 miles from the main land, which could not be
seen

seen by the people. Within this ring of islands, it is again roomy and deep. On the easternmost island, lying 16 miles distant from them to the S. E. they found some pieces of wrecks, and a little underwood, but no fresh water in the pits which they dug, though *Peljaert*, in 1628, found water on one of these islands. The said crew built out of the wreck, a vessel wherewith they arrived at Batavia.

The best account we have of these shoals is given by Captain *Daniel* of the *London*, in June 1681, as may be seen in the following abridgment from *Thornton's English Pilot*:

"Wind at S. W. by W. steering by compass N. E. by E. at 10 A. M. the water was discoloured; a man at the foretop saw a breach rise a-head of us; we presently put our helm hard a starboard, and stood away N. W. by W. and weathered the north-west end of it, about half a mile; at that distance, the depth 35 fathoms, white corally ground, with some red mixed; next depth (about two hours after we tacked) was about 40 fathoms, the same ground; and at 9 P. M. having ran off by log on a N. W. by W. course, about 24 miles, had no ground at 65. We continued sounding all night, and had never less than 65 fathoms line out at a time; at six this morning, which was the last time we sounded, veered out 100 fathoms, but had no ground at that depth.

"The breach, which we first saw, happened to be the northernmost of all, there being several; and by our computation lies near 20 miles in length along shore, which lies by compass W. N. W. and E. S. E. but the main land we could not see; but saw within this breach another not far distant from it, which made a channel, and the water smooth between them; and likewise within all these were seen several small white sandy islands, with some shrubbed bushes on them; they seemed to be steep to, the water making no breach on them, though very low, or near the water's edge. The breach, which lies within, hindereth the sea from breaking on these islands, the water being very smooth: provided any man should be so unfortunate as to fall in with the south end of them, I fear their ever getting off again, having a prodigious swelling sea on upon the breach. Variation per evening, amplitude after sight of the land, $2^{\circ} 24'$ West."

In the parallel of $20^{\circ} 30'$ and about 80, or according to others, 100 leagues distant from the coast of New Holland, lie the TRYAL ROCKS. *Seller*, who published his *English Pilot* in 1675, tells us they take their name from one of our East India ships, called the *Trial*, that was lost upon them, and which event is supposed to have happened in the year 1622; this assertion of *Seller* did not convince all his countrymen, for in a subsequent edition of the *English Pilot*, 1703, we find the following note on the Trial Rocks: "There is some wild reports going into Batavia, that they have been seen above 20 leagues in length, but by most laborious enquiry, could never hear of any person that ever saw them; it is, therefore, adjudged false, or that they are farther to the eastward than any ship designed for the west end of Java will go; otherwise must have become familiar to the Dutch, who yearly have some one or other of their ships that sail over it, if their accounts be good."

However

However the celebrated navigator, *William Dampier*, who was persuaded of the existence of these shoals, had resolved, in his return from New Holland, in 1700, to go in search of them, but was prevented in his attempt by sickness and want of provisions. "There is scarce any doubt," says *Dampier*, "but I should have found them, and this discovery must have been of the greatest service to all those who navigate in these parts." They were seen at last in 1718, by the Dutch, who sent a sloop from Batavia, in order to explore them. The plan that was taken then, describes the whole range, above and under water, lying East and West about 40 miles long, and 15 broad, in $19^{\circ} 20'$ latitude South, 80 leagues from New Holland.

In July, 1777, Captain *Matthias Zesp*, of the Danish ship, *Fredensberg Slott*, saw likewise the Tryal Rocks, and his account places them, viz. By a good meridian observation, when they bore West 12 miles, latitude $20^{\circ} 40'$ South, meridian distance $23^{\circ} 45'$ East from St. Paul's; but by the run afterwards, S. $\frac{1}{2}$ W. 840 miles from Java. "These rocks," says the Danish account, "lie N. W. and S. E. and extend in length about 24 miles; the center of them appears very broad, and not higher out of the water than a small vessel's hull, or a large fish lying upon the water; the extreme are clusters of small broken rocks, now and then appearing as the sea retires; they are about 4 miles from each extreme of the main rock, upon which there is a great surf.

In 1770, the *Harcourt*, Captain *Nathaniel Paul*, had 40 fathoms, stiff clay, on a bank, which they reckon in $21^{\circ} 0'$ south latitude, and $29^{\circ} 30'$ from St. Paul's, or about $106^{\circ} 17'$ east longitude from London. The situation of this bank is very near that in which the Danish accounts place the Tryal Rocks. But this account is so different from that of the Dutch, both in the description and the latitude of the rocks, that it may be questioned whether those seen by the *Fredensberg Slott*, are the same with the rocks which were surveyed by the sloop from Batavia; and unless a new Dampier will attempt to go again in search of the Tryal Rocks, we must patiently wait until some lucky chance elucidates the matter to the satisfaction of all navigators.

The KEELING, or COCO ISLANDS, are four small islands, surrounded by many islets and breakers, and extending above 16 leagues from North to South. They are very low, not to be seen above 5 leagues off in clear weather, from an Indiaman's deck, and covered all over with trees. The ingenious Mr. *George Robertson* has determined their situation by an Arnold's box chronometer in a short run from Java Head, and corroborated by three sets of Lunar observations, objects East and West.

The northernmost is a single low island in latitude $11^{\circ} 50'$ South, and longitude $8^{\circ} 1'$ West of Java Head, or $97^{\circ} 13'$ East from London. It lies due North from the west-

* Although the longitude of Batavia seems to be very well ascertained at $106^{\circ} 56' 52''$ from London, yet there is a very considerable difference in the various reports of the longitude of Java Head, which is only inferred from that of Batavia.

ernmost of the cluster of islands, distant 14 miles; "a fair passage lies between them, through which," continues the same gentleman, "we passed in the *General Coote*, Captain *Baldwin*.

"The southernmost are a circular cluster of low islands, whose latitude is from $12^{\circ} 4'$ to $12^{\circ} 23'$ South. Their eastern extremity $7^{\circ} 50'$ West of Java Head, or $97^{\circ} 24'$ from London, and their western extreme in the meridian of the northernmost island. In ranging along the north part of the cluster of islands, we saw no danger detached from them, they being steep to, close into the shore, which is a beautiful white beach, appearing like sand, but which I believe is white coral; a reef runs out from the N. W. corner of these islands, a short quarter of a mile."

N. B. The cluster of islands mentioned by Mr. *Robertson*, is represented in the Dutch plans as forming a fine harbour.

To the E. N. E. of the Coco Islands, lies CHRISTMAS ISLAND, called also MONEY ISLAND; its latitude is in $10^{\circ} 30'$, and the longitude generally assigned to it, near the meridian of Java Head. This island is high and of a beautiful appearance, abounding with trees of different sorts, particularly coco nuts, and limes, and may be seen 10 leagues off, in clear weather. An anchorage in 14 or 15 fathoms was supposed to be on the north side of it, but Captain *George Richardson*, of the *Pigot*, has proved the falsity of that report. "In this course," (from Java Head, see above p. 64) says the Captain, "I made Christmas Island, at which I was very desirous of anchoring; I had both my boats in shore sounding for two days round the island, but without being able to find anchoring ground, having 55 fathoms, hard-rocks, within a cable's length of the shore. The island all around is steep to, nor is there any landing place for a boat, except one in the north-west part of the island, which is a small white beach, resembling sand, though it is nothing but white stones and coral. The boats landed there and brought off a number of land-crabs and boobies, and saw several wild hogs, but did not discover any runs of water. After being fully convinced there was no anchorage, I stood to the northward."

GENERAL DIRECTIONS FOR THE COURSE
FROM THE
CAPE OF GOOD HOPE TO INDIA BY THE ISLE OF FRANCE,
OR MAURITIUS.

INSTRUCTIONS FOR SAILING INTO
DIEGO RAIS, OR ISLE RODRIGUE, AND INTO MAURITIUS.

VESSELS which are bound to Mauritius, after having doubled the Cape, should keep in the parallels of latitude from 35° to 36° till they have run eastward as far as between the 57th and 58th meridian from London. Thence, if they sail E. N. E. and afterwards N. E. they must manage so as not to reach the parallel of 26° till they are in $63^{\circ} 30'$ east longitude, that is to say, North and South of the Isle Diego Rais; from this last position they will steer North, as far as the 20° of latitude. By keeping on their course in this manner, ships will prevent the bad effects arising from the errors in their reckoning, and make sure of the port they are bound to. As soon as they shall have attained the latitude of 20° they will be able to make good their course West, till they get sight of Mauritius. The variation of the needle will enable them to know, very nearly, whether they are to the eastward or westward of Diego Rais. If to the eastward the variation will be found from 10 to 12 degrees, according to the distance they happen to be from the island; but if they should find it between 14 or 15 degrees, they will then be to the westward of the island. Farther observe, that if the difference of the computation of longitude be to the eastward, and they have got sight of Diego Rais, they should pass it to the southward.

DIEGO RAIS, named by the French ISLE RODRIGUE, lies in $19^{\circ} 40'$ latitude South, and $63^{\circ} 16'$ longitude East of London. This island, mountainous and rugged, having very little of level land, is every where covered with trees and shrubs, and may easily be seen at the distance of 12 leagues. Its length from East to West is about 6 leagues, and its greatest breadth $2\frac{1}{2}$ leagues from North to South. It is encompassed with
reefs

reefs of shoals and rocks from 3 to 6 miles from the shore, except the N. E. part of the island, which is bold to, having within half a mile of the shore 16, 18, and 20 fathoms, from which depth, as you stand to the northward, you will have 25, 30, 40, and 45 fathoms 3 miles off the shore, and without that, no soundings; farther to the westward the soundings are more gradual. On the middle of the island there is a remarkable Peak, which is a good mark for the road, or harbour; when this peak bears South, you are then a-breast of the road; and when it is bearing from S. by W. to S. S. E. you may stand in shore to 16 or 18 fathoms, gradual soundings; but the bottom in general is coral rocks, though you may find in some few spots, sand and mud; however there is no safe anchoring without the road. You may stand off shore with the above bearings, the water deepening pretty gradually to 30, 40, and 45 fathoms, and then no ground, as it is said above.

This road, or harbour, is very safe, when you are in; you may anchor there in 9, 11, 12, 13, or 14 fathoms, sand and mud, clear and good holding ground, about a $\frac{1}{2}$ of a mile from a reef which is in shore from you, and about a $\frac{1}{2}$ of a mile from the shore: this reef being very shallow, the landing at low water is very bad. Near this road there is a small level spot of land between two hills, with some houses where the French keep a few soldiers and black slaves; their business is to get land turtles that are sent to Mauritius when the vessels arrive, which are constantly employed in that service; but the number of these turtles diminishes daily, and there is even reason to fear that the rats and wild-cats, which have multiplied excessively in the island, will soon destroy the whole species.

Vessels which have occasion to touch here should stand in for the island on the north-east side, at about $\frac{1}{2}$ a league's distance, and then coasting by the reefs until the northernmost point of the said island bears S. W. they may either lie a-try or make short trips, whilst they wait the return of their long-boat, which must be sent ashore at a proper time, lest she should fall to leeward of the houses. They are then to sail at a musket shot distance along the reef which lies at the northern point; and as soon as the flag upon the houses bears S. W. by compass, they should get their larboard tack a-board, and steer S. W. by S. to go to leeward of several rocks that are lying off the edge of the reef, then they may anchor in 9 fathoms water, sandy ground, about a pistol shot from the reef; and the bearings and distances will be as follows, viz. The tail of the reef forming the bay on the east side N. E. 3 miles; the flag S. W. 3° S. $1\frac{1}{2}$ mile; Diamond Island, which lies the nearest of all, W. by S. 5° South 3 miles; Boobie's Island, the farthest off, W. by N. 5° N. and the point of the breakers on the starboard N. W. by W. near 4 miles. When you go out of the anchorage, provided your ship has not driven much to leeward in getting under way, if you steer North it will carry you by the east end of these reefs in about 10 or 12 fathoms, when you may easily see the bottom; should your course be N. by E. or N. N. E. you will

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then

then keep the mid-channel between the rocks and the reef, by steering at first N. 3° West, and afterwards North; and when you find yourself between the two, then you sail above half a league over a rocky bottom that is seen very distinctly, and on which there is at least 8 fathoms water.

The winds at Diego Rais blow constantly between the East and S. E. sometimes very strong gales, with showers of rain; but more frequently fresh gales, with fair, cloudy, or hazy weather. Sometimes the weather is moderate, fair and clear, and the sea remarkably smooth for several days together; but it is calm very seldom.

The island is subject to hurricanes, and in the stormy months, which are January, February, and March, they are sometimes very violent. It has been observed at Mauritius, that when the velocity of the wind, in the most impetuous hurricane, exceeds 140 feet in a second of time, nothing is able to resist its fury. The sudden and extraordinary variation of the barometer, in those latitudes between the Tropics, is the only sure indication they have to foresee a hurricane, and prepare against it a few hours before it begins.

When his Majesty's Squadron, under Commodore *Tiddeman*, was there in September, October, and November, 1761, during the 7 weeks they cruised off this island, it was observed that the current for several days ran so strong to the westward, that it was with difficulty they could keep their station, with a constant press of sail on the ship, &c. and notwithstanding their utmost endeavours, they often found that they had lost ground every day. At other times the current ran as strong to the eastward, so that when a gale of wind had happened that put the ship under close reefed top sails, they did not get ground, or barely hold their own for several days together. The current was observed to run with stronger force at the full and change of the Moon.

There is a regular tide in the harbour; the flood to the eastward, and the ebb to the westward, at the rate of 2 knots *per* hour. It flows N. by E. being high water at three quarters after twelve, on the full and change of the Moon, when also its perpendicular rise is about 6 feet.

Plenty of good water may be got at several convenient watering places in the bay; and also plenty of fire wood for cutting. They have abundance of fish of several sorts, of which it is remarked, that those caught with hook and line in deep water, are unwholesome and of a poisonous nature, whereas those got in a seine or net in shore, have nothing noxious, but on the contrary are very good and wholesome. The people on board Commodore *Tiddeman's* Squadron, although they had been warned by the French inhabitants, experienced themselves the truth of this dangerous and unaccountable * difference.

Besides

* Mr. *Nichelson*, from whose remarks, p. 59, this difference is mentioned, seems to confine the poisonous quality to the fish caught in deep water. We read the following observation in *Abbe Racine's* late publication; "They find on this coast (of Madagascar) several kinds of fish, of which you are not to allow yourself

Besides the quantity of land and sea turtle found at Diego Rais, particularly of the latter, they have likewise abundance of Manatees, which are good and wholesome food; but herbs and vegetables are very scarce, owing to the want of cultivation. The soil is nevertheless very rich and fertile; limes, oranges, figs, long-pepper, &c. are the spontaneous productions of this island, whose climate is very healthy and of an excellent temperature.

The distance from Diego Rais to Mauritius is computed to be 100 leagues. When you have not made the former, and you are uncertain as to your distance from the latter, you ought to sail with the utmost caution, for fear of falling in with Mauritius unexpectedly in the night time, on account of the dangerous reefs which surround the eastern part of it, stretching in some places very far into the sea.

The ISLE of FRANCE is called by the English and the Dutch MAURITIUS; it can easily be seen 15 or 16 leagues off in clear weather, but the clouds and fogs that very frequently rise above it, prevent its being descried at that distance. The appearance of the land, on which several mountains, of different shapes and magnitudes, rear their heads, is very irregular. When you make it in the latitude of 20° , there appears to the southward a group of mountains, called the Mountains of *Bamboes**, which lie above the S. E. Port; and on the North side you will see four small islands which lie N. E. of the northernmost point of the main-island. It is between these four islets they generally pass in sailing to the N. W. Port, which is the chief place in this island.

ISLE RONDE, or ROUND ISLAND, which is a small isle that lies farthest out at sea, is also the most remarkable when you come from the eastward; it can be seen 10 or 12 leagues off. It is not more than one mile long, appearing round and like a haycock; as you approach it you will perceive a large barren rock still smaller, which is called Serpents Island; this lies about a quarter of a league N. N. E. 5° E. from Round Island.

Round Island lies in $19^{\circ} 50'$ latitude South, and when you get the length of Mauritius in that parallel, you will descry this small isle sooner than the great one; especially when the sky is a little clouded, and the horizon hazy. In coming from the southward, Round Island appears less, but then you will perceive its greater extent; but whether you come from the southward or from the eastward, you should always steer so as to pass to the southward of it, at $\frac{3}{4}$ of a league, or at a good $\frac{1}{2}$ league's distance;

yourself to eat, without first having introduced a piece of silver under their tongue; and when the piece of silver loses its colour, and becomes black, those who should eat of that fish would be exposed to the most fatal accidents. The squadron of Admiral *Boscawen*, suffered a considerable loss at Rodrigue, for having neglected to take this precaution." *Voyage à Madagascar et aux Indes Orientales, par M. l'Abbi Rochem.* Paris, 1791, p. 23.

* These are reckoned among the highest of the island, whose elevation above the level of the sea is only 2,800 English feet.

thence you afterwards make sail towards another small island, named COIN DE MIKE, or the Gunner's Coin, from its shape, which lies about 10 miles from it S. W. by W. $3^{\circ} 30'$ West.

Three miles N. E. of the Gunner's Quoin, and about 7 W. S. W. of Round Island, lies LONG, or FLAT Island, so called because its greatest part is very low land; it is cut in two by a small arm of the sea, passable only with pettiaugas. To the N. E. of it is a large rock, which resembles a huge tower; it seems to be separated from Flat Island, though it is joined with it by a ridge of rocks even with the water's edge. The north-west end of Flat Island is high and steep to, and the common passage for vessels lies between this island and the Gunner's Quoin.

As soon as you have doubled Round Island to the southward, you are to stand for the Gunner's Quoin, leaving it, however, a little on the larboard hand, to enable you the better to get clear of several rocks above and under water, stretching along the north side of the Quoin, from which, the farthest in the sea, are about a musket shot distant.

When you have passed the westernmost rock, you will approach the Gunner's Quoin, the west side of which is the highest, and steep close to the sea; from this place you are to sail round the *Pointe des Canoniers* (Canoniers Point), that lies directly S. W. 2° West of the most elevated part of the Gunner's Quoin, making a due allowance for steering clear of the breakers off the point, as they run out the length of a cannon shot. The setting of the currents, which last about an hour, is generally very rapid between these islands, and it has been found by repeated trials, that they run at the rate of 3 miles an hour. The flood sets north-westward, and sometimes eastward, and the ebb just the contrary. You ought therefore to watch the tides very carefully, and keep a little more to the one or the other side, as circumstances may require.

Directly opposite to the Gunner's Quoin, Long Island forms a long sandy cove, at the south-west point of which lies a ledge of rocks running out the length of a cannon-shot. As this reef is extremely dangerous, you ought to sail very near to the Gunner's Quoin, or at least to keep in the mid-channel.

The intermediate space between the Gunner's Quoin and the northern parts of Mauritius, is full of shoals; for this reason you must never venture to pass that way, unless you should be very well acquainted with the several channels.

In case of a calm, whilst you are between these islands, the most expedient method will be to come to with a stream, or kedge anchor in 15 or 20 fathoms, gravel or coral, which is the common ground here; by this timely precaution you will avoid either being driven by the currents upon the reef, joining with Flat Island; or being forced between that and Round Island, where there are several shoals, and particularly a ledge of rocks stretching out from Round Island near 3 miles to W. N. W. This ledge, which never breaks but when the sea runs high, renders this channel narrow and dangerous.

You

You may, indeed, pass it without meeting with any accident, yet it is much safer when you are to leeward of Round Island, to pass without Flat Island, ranging along it for about $1\frac{1}{2}$ mile, and from thence to sail towards Cannoniers Point.

After you have doubled this point, you must run along the shore, to sail as near as you can to the point of the sea arm, which lies about 3 miles off from it. You then continue your course, keeping near 1 mile from the reefs that extend along the coast, and taking particular care to avoid those at the entrance of the *Baie des Tortues*, (Turtle Bay), as well as the *Baie du Tombeau* (Monument Bay), which are stretching the farthest to sea; to avoid these you are to keep in 13 or 14 fathoms at least, in the day time, and in 20 during the night.

From the reef *du Tombeau*, your course ought to lie a little more to the southward; then S. S. W. till the starboard point of Great River, and the mountains of the guard-house, with a small hummock, are brought to bear all in one.

When you have got into this bearing, steer S. W. for 2 buoys at the entrance of the harbour on the reef's end of *l'Isle aux Tonneliers* (Cooper's Island), and distinguished by 2 small flags. This course should be continued till you open the most advanced point of Cooper's Island, near the small hill in the hollow of the cape; you come then to an anchor in 14 or 15 fathoms, at a cable's length from the 2 small flags just mentioned.

If the winds should happen to blow from the North, or N. W. which is sometimes the case, it will be needless to anchor without, because you may then easily enter the harbour, whose channel is marked out by buoys with small flags upon them; you must steer S. E. and S. E. by S. for 2 heads of mountains, which are called the *Two Peter Boats* (leaving them a little to starboard), till you are quite within the first point of Cooper's Island.

In case you should not make Round Island till the evening, and should not be able to double the Gunner's Quoin before night, as it will be extremely dangerous to lie exposed between the islands, when the darkness does not permit you to distinguish objects, it is much safer to make small trips in the offing, or in sight of Round Island, with this caution however, not to stand off farther than 2 leagues from it, and when you tack, to keep your broad-side towards Mauritius, for fear of the reefs round it; for as this part is very shallow, you would run the risk of being lost upon the shelves before you saw the land. You ought not, above all, in this track, to lie to, because of the tides.

After doubling Round Island, if you are able to distinguish the Gunner's Quoin, and Long Island, so as not to lose sight of them, which may be done in a bright moonlight night, and fine weather; you may then keep on your course and sail betwixt them; it will be sufficient if you guard against the ledges of Long Island, and of the Gunner's Quoin. Having passed the latter, and being about a league and $\frac{1}{2}$ to the West of it, you should
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steer W. S. W. by compass, to range along the reef of Cannoniers Point. They generally light a fire upon this point when any vessels are in sight; as soon as that fire bears S. E. of you, about 3 miles, you will have doubled the reef, and may then keep coasting along, taking care, however, not to approach the shore nearer than 15 fathoms.

However, as it is difficult to distinguish the entrance of the harbour in the night-time, and as you may be easily deceived by the different fires on the mountains, it will be much safer, after you are passed Cannoniers Point, to anchor in 18 or 20 fathoms, and there wait for day-light. Above all, when there is but little or no wind, you must never venture to come near Cannoniers Point, whether in the day or night-time, because of the eddy of the tides, which run there with a great velocity.

I N N E R P A S S A G E.

DESCRIPTION

OF THE

COAST OF AFRICA

FROM

CAPE LAGULLAS to CAPE CORRENTES.

STRUYS-BAY,—FLESH-BAY,—FISH-BAY,—MOSSSEL-BAY,—
ALGOA-BAY, &c.

FROM Cape Lagullas to Cape Infanta the west point of Struys Bay, called also Bay St. Sebastian, the coast extends circularly to the N. E. about 40 miles. This point is low and covered with sand downs, as well as the land to the eastward of it. STRUYS BAY is nothing more than a deep bight, having good anchoring ground, but no shelter, except from the north-westerly winds; besides it is exposed to a continual swell and strong current, and is therefore to be avoided.

The east point of Struys Bay is low and sandy; thence the land, 55 miles farther, forms another bight, called FLESH BAY, or BAY ST. BRAS, which is entirely open, and where there is no shelter but from northerly winds: there is in it a small island, and a round white sand, by which it is easily known. When this bay bears North, seven lofty hills inland are seen over it, the shore of the bay being low land. Cape St. Bras,

the

the west point of the bay, is pretty high and sandy, with a reef stretching out just as from the points above described.

From Flesh Bay the coast lies easterly to FISH BAY, named BAY ST. CATHERINE by the Portuguese discoverers. This is likewise a foul open bay; when a-breast of it you see to the North a mountain inland, upon which stands another like a barn, and to the West are the 7 high hills before mentioned, by which marks this bay is easily known. To the East of this lies the little bay of St. Sebastian, in which a large river, called Elephant's River, discharges itself.

From Fish Bay the coast extends to the E. by N. 45 miles to Cape Delgado, the west point of MOSSEL (Muscle) BAY, which is the *Bahia Formosa* of the Portuguese. This is an open bay like the others, but it runs in 6 miles to the westward of the west point, and one lies there sheltered from the north-easterly to South winds, but exposed from the S. E. to East; you find within a small rocky island and some brackish springs. Though it is the best of all the bays hereabout, you are not to make use of it, except in cases of the greatest necessity, because the S. E. and East winds make there a great sea, and the water for drinking must be taken from brackish pits. *Cape Delgado*, its west point, is of a middling height, flat and green, and appears from the sea like a table hill. Off this is good anchoring ground every where, but from the outermost point runs out a reef of rocks about $1\frac{1}{4}$ mile to the eastward. This point lies in $33^{\circ} 55'$ latitude South. The land to the eastward of the bay is high double mountains, running down to the sea, with little strand, whereby the bay is known in coming from the eastward; as this is the last high land near the sea, and the coast to the West is lower, with the hills farther inland.

Above 40 leagues to the East of Cape Delgado, lies Cape Recife, and 30 miles West of it, the Bay, or Road of St. Francis. This Cape, which is surrounded with breakers, is the south point of Algoa Bay, and lies almost S. W. 40 miles from Cape Padron, a flat, woody hill, and the easternmost point of the same bay. ALGOA BAY is very deep, and there may be got fresh water and fire wood; the soundings going in are from 24 to 10 fathoms. At the north end of it lie 4 small islands, between which and the main land you may safely anchor in 12 fathoms, sand. Seven leagues East of them, and 5 West of Cape Padron, are the 2 small islands called *Cbaons*, or the Grounds, by the Portuguese; about 2 leagues to the south-eastward of these, and 3 from the main of Africa, lies the rock on which the *Doddington*, outwardbound Indiaman, was lost in 1755. They had doubled the Cape, and made 11 degrees meridian distance from Cape Lagullas. Judging they were near the Madagascar shore, and the passage open, they bore away to the northward; but on the 17th of July, about a quarter before one in the morning, they struck, saw the breakers, and in less than a quarter of an hour the ship went to pieces. Out of 270 people only 23 were saved; they remained 6 months on this rock, to which they

they gave the name of *BIRDS ISLAND*, and built a sloop out of the wreck. The chief mate and 16 people, being all that remained alive, went to Madagascar in her, when the *Cornarvon*, Captain *Norton Hutchinson*, took them on board, and carried them to Madras.

THE COAST, RIVER, AND PORT OF NATAL;

COAST OF FUMOS,—DA LAGOA BAY,—CAPE CORRENTES, &c.

FROM Cape Padron, the easternmost point of Algoa Bay, and to which the Dutch settlers have given the name of Point Ekeberg, the coast turns abruptly to the N. E. and continues in that direction for above 182 leagues. On the east side of Cape Padron lies Bay Cotant, which is very little known; and 16 or 17 leagues farther up is the mouth of River Infanta, or the Great River, as it is called by the Dutch, the greatest part of the coast, between the Cape and the River, being remarkable by its sandy downs. Three leagues on this side of River Infanta lies, very near the shore, a remarkable rock; the Portuguese discoverers have named it the Fountain Rock, and it appears to be that projecting land called *Burtzenbook* by the Dutch settlers.

River Infanta is the southern boundary of the COAST OF NATAL, or CHRISTMAS, so called because the Portuguese discovered it on Christmas day; thence to the first point of Natal, which is remarkable by three small hills above it, the distance is about 21 leagues N. E. This First point lies 45 leagues to the S. W. of the last point, and between them is another called the Middle Point, which separates the two great bents of the coast in that long interval. Port Natal lies 5 leagues N. by E. from the last point in 30° latitude South. Nine leagues north-easterly from that port, you meet with Fishing Point, and 21 leagues farther with Point St. Lucia, both low land, and not so easily remarked as those we have described before.

THE RIVER AND PORT OF NATAL is a very extensive low ground covered with water at high tides, and for the most part dry at other times. This place is only fit for small vessels; the bar is very dangerous, having only 5 feet at low water, and the sea rises but 5 feet more, except in the months of September and October, where you will find 12 feet at spring tides. The course on the bar is to the S. W. the swell being very great, but as it is very narrow, two or three seas will carry you over; and then you deepen your water to 2, 3, 4, and 5 fathoms. You ought to range the larboard side at a ship's length, and when you are about one mile within the river, you perceive a barren ground at the declivity

declivity of a hill, over against which you may anchor in 4 fathoms, at a cable's length from the shore; the safest way is to moor with four cables on the land rocks. It is high water there at 10 o'clock, at the full and change of the moon.

When you are coming from the northward, River Natal's Point is the more remarkable, as it appears like a hummock cut in the shape of a dorado's nose; and it projects into the sea, forming a cove, where you can anchor with a S. W. wind: you perceive on the land to the S. W. by W. a table mountain, with another of the same form under it. At this point there are sunken rocks, which stretch off a $\frac{1}{4}$ of a mile; you leave them on the starboard coming in, and the sandy point on the larboard; you perceive also a mountain about a $\frac{1}{4}$ of a mile to the South of the point. This port was pretty much frequented by English vessels in the last century.

All the coast of Natal is generally huge land near the sea, intermixed with sandy spots between the rocks and reefs of which it consists. It has no harbour except Port Natal, and none of its rivers can admit large vessels; but you have deep soundings and clear ground all along the coast. The inland parts have green mountains covered with many trees, and in the valleys they have found olive trees. The land is fertile, has many inhabitants, plenty of wild and tame cattle, and multitudes of elephants.

The COAST of FUMOS, or COAST of SMOAK, which ought to be considered as a part of the Coast of Natal, owes its name to the great quantity of smoak perceived there, in different parts, by the Portuguese discoverers. It is above 62 leagues in length, from Point St. Lucia, just mentioned, to Cape St. Mary's, the north Point of Da Lagoa Bay; for about 40 leagues, that is, as far as Cape Fumos, its direction lies towards the N. E. and thence it extends to the North; the whole coast being low, with sandy downs, and not to be seen but when you are near it.

DA LAGOA BAY, as the English call it, is named by the Portuguese and the other nations, Bay of LOURENÇO MARQUES, from the name of its discoverer, and also Bay of the HOLY GHOST; it lies at the entrance of Da Lagoa River, being near 30 miles broad from East to West, and about 60 miles deep from North to South; but the channel, on account of the shallows on both sides, has not more than 5 miles in breadth. The north Point, or Cape St. Mary's, on the island of the same name, and in 26° latitude South, is distinguishable by its high undulated land; a few miles to the S. E. of it, on the middle of the east Coast of St. Mary's Island, lies a single hill with white spots, and to the southward of this, about 11 miles, is seen a high mountain called Mount Calato, indicating the northernmost extreme of the main land, which is separated from St. Mary's Island by a very narrow and rocky channel. This point is sometimes called Cape St. Mary's, while the true Cape is named Point Unhaca.

There are three principal rivers in this bay, to which they give the names of the Kings who reside near their entrances; the first named Libombo, or Maumbe, and also Da

Lagoa, and English River, is situated in the north part of the bay; the Portuguese, and after them the Dutch, had there their chief place of trade, which was carried on in four villages, each governed by a king, viz. Libombo, Musamkwamea, Lakwadonca, and Manissée that lies 30 leagues distant from the river's mouth. This river has a bar, on which you find 15 feet water at high tide; the vessels went up a league farther and anchored in 4 fathoms near an island, upon which they erected huts and bankals for the time that they were to remain there.

The second river, where the Portuguese had also a factory, is known by the several names of Mafumo, Manica, and Holy Ghost River; it is the most considerable of the bay; it has no bar, and will admit a ship of any size. There vessels generally remain at anchor.

When you are lying in the opening of the bay, in 12 or 13 fathoms water, and Cape St. Mary's to the South 5° W. distant about 3 leagues, if then you sail to the West and W. by N. you will see the point of Mafumo River, which appears cleanly cut, and of a reddish colour; steering for it you have very uneven soundings, as 10, 6, 4, and 5 fathoms, with some rippings.

In going into the river you are to come nearer to the starboard than to the larboard side, and when you are about 5 miles within, you drop your anchor in 10 fathoms, over against a long sandy point, which lies on the larboard. Either in coming in or going out, you must always have two boats a-head, one on the larboard and the other on the starboard hand, in order to take soundings, and give you notice of the depth of water.

The town of Mafumo, which is said to be now destroyed, was built on a mountain on the larboard side going up, that is, on the side opposite to that where the ship is to anchor. They reckon 4 leagues from the entrance of Mafumo River to that of Libombo, and the course is W. S. W.; the former is salt water, but 3 miles above the anchoring place, and beyond a point on the larboard side, you will find three openings, the middle of which is a fresh water river; going up this river 4 or 5 leagues you may fill your casks with very good water.

The trade of these rivers consists in elephants teeth, and some gold dust; but you must be continually upon your guard, the nations being in general a thievish and traitorous race; and the European traders, who have trusted to their good faith, have always been deceived and plundered: several examples might be quoted, one among others of an English Captain whom the King of Timbo, who lives about 20 miles up the river, had seized by stratagem, and who was obliged to give 300 pounds weight of copper, and many strings of beads, for his ransom. They have commonly recourse to these expedients, when they have nothing more to sell.

In the second voyage which the same Captain made to that place in 1709, being about 20 miles up Libombo River, his mate was murdered, and himself was seized and dragged

above

above 30 paces by some of the natives; when luckily his coat having been torn off, he escaped and ran back to his boat, from which he fired upon the murderers, and killed several of them. From this time the Captain never went to trade without having several armed men by his side, and he kept always within musket shot of his boat, where people were ready to fire in case of an attack. It must be said, however, that this happened in the upper part of the river, and that the inhabitants are not so ferocious near the coast.

The third river called Machavana, lies 8 leagues to the South of Mafumo River; it is not navigable for ships, but a boat that draws only 6 feet water, can go 30 leagues above the entrance, where the trade is carried on; you must have with you a native of Mafumo River to give notice of your arrival to the King of Machavana, who lives inland 6 or 7 leagues from the river, and then comes down with his goods. The finest elephants teeth are bought in this place, and the only commodity which the King will receive in exchange, is copper, giving 5 or 6 pounds of ivory for one pound of copper, so that 20 pounds weight of this metal will buy a tooth weighing 80 or 100 pounds. The bay as well as the rivers abound in fish of several sorts, and have some sea cows. The country near the sea is very level, but the inland parts are mountainous and covered with small trees and shrubs, and full of elephants, tigers, leopards, and wild boars; they have also wild asses and stags, buffaloes which they tame, bulls, cows, sheep, goats; and the same fowls we have in Europe. The beef and goats' flesh are excellent here; the land produces maize, as well as rice, and a small species of wheat, called Musaca, which is in great repute among the natives, who likewise cultivate sugar-canes, and make use of honey. They have several sorts of fruits, the principal of which are the pine-apples and water-melons.

From Da Lagoa Bay to Cape Correntes, or the Cape of Currents, the coast runs N. E. by E. above 75 leagues; it is very little known, and has several openings and rivers, the principal of which is Inhampura River, 25 leagues from the Cape.

CAPE CORRENTES lies in $23^{\circ} 36'$ latitude South, and about $36^{\circ} 45'$ East of London; it is of a moderate height, and it can be seen with the adjacent land 9 or 10 leagues off in clear weather.

DESCRIPTION

OF THE COAST BETWEEN

CAPE CORRENTES AND MOZAMBIQUE.

CAPE ST. SEBASTIAN,—SOFALA,—ILHAS PRIMEIRAS,—
ANGOXIA ISLANDS,—MOZAMBIQUE, &c.

FROM Cape Correntes to Inhambane, the coast runs to the North 5 or 6° West about 10 leagues. INHAMBANE is a river easily known by its large opening, the south point being steep and of a moderate height, whereas the land is higher at the north point, and makes like a saddle.

Thirteen leagues North of Inhambane lies FRENCH RIVER, which is so shallow that no vessel can enter it; the land to the north of that river is uneven, but steep, with some thickets, among which you perceive sands. From French River to ROBBERS RIVER, which is also very small, the coast stretches to the North 5 or 6° West. This is distinguished by a huge land on the north side, the whole shore being of white and red sand. Two leagues North of the point, which makes the entrance of Robbers River, there is another point covered with white sand, and scattered clumps of trees, and the coast runs in this manner as far as Cape St. Sebastian.

CAPE ST. SEBASTIAN*, which lies in 21° 30' latitude South, is of a middling height, and very steep; when you approach this Cape the land is higher on the south side, appearing white and sandy, and you find no ground near it, but at 2 or 3 miles from the coast.

To the North, 5° East of Cape St. Sebastian, are the BAZARUTO ISLANDS, which, as you come from the South, appear united and like a single island; the north point of

* If the *Neptune Oriental*, which we transcribe in this place, be right, it was not Cape St. Sebastian that was seen by the King's ship *America*, February, 1764, bearing due West 24 leagues. See Mr. *Nichelson's* Remarks and Observations, page 112, second edition. Mr. *Nichelson*, in his Appendix, page 5, agrees better with the *Neptune Oriental*. "Cape Sebastian," says he, "is tolerably high land, about as high as the land of the Start Point in England, and projects but a little way out into the sea. When you are off this Cape it appears higher land than any other in sight, either to the northward or southward of it, and has no soundings within 3 miles of it. The Coast, all hereabouts, is tolerably high land with a steep white sandy beach, which, at a distance, appears like chalk cliffs."

the

the farthest has a reef covered at high water, and lies in $21^{\circ} 12'$ latitude South. These islands form a large cove with above 20 fathoms water, in which you lie sheltered from the westerly winds; you may wood and water there, but it is not prudent to go between the isles without having previously ordered your boats to sound.

The PARACEL, or BANK of SOFALA, begins at the Bazaruto Islands, and extends as far as those called Primeiras; though you get soundings upon it, you cannot see the land before you are in 20 fathoms, but there is nothing to fear on this shallow, and the decrease of depth indicates gradually the approach of land. The prevailing winds on this coast, being from South to S. S. E. and the current very strong, the country vessels frequent Sofala Bank to anchor upon it in case of a calm.

From the Bazaruto Islands they reckon about 23 leagues N. W. to SOFALA, whose river, having not more than 10 or 12 feet water, admits only small vessels. Before the fortress of the town lies, from North to South, Inhafato Island, between which and the main land two channels are formed by a narrow sand bank; the deepest is on the land side, and the ships come through it; but as the bank may shift it is advisable not to enter without a pilot.

Above 30 leagues to the N. E. of Sofala Bar, in about 19° latitude South, lies LUABO RIVER, which is the first mouth of the Great Cuama River; the whole range of the coast in that space, being a low land near the sea, with large sandy plains. From Luabo River, in going towards the N. E. the coast is more elevated, with some patches of red land; the latter forms a cove appearing like a river, and called *India Cove*; beyond it, in a northerly direction, there is a sandy plain 4 or 5 leagues in length, which terminates at the S. W. point of Quilimané River.

The entrance of *Quilimané River*, or the second and chief mouth of the Cuama, is half a league broad between the south-west point (called also Sea Horse Point), and Point Taugalané, which lies on the north side; it is crossed by a sand bank that extends along the whole coast from Sofala. The course of this river is 180 leagues in length; the first Portuguese factory is situated on the north side of it 6 leagues above the entrance, and thence to Sena, which is the principal settlement, the several windings of the river make the distance above 60 leagues. Quilimané's entrance is very difficult to be known even by the most experienced pilots; it lies in $18^{\circ} 10'$ and Sena in $17^{\circ} 37'$ latitude South.

Twenty-six leagues to the N. E. and N. E. by E. of Quilimané's entrance, you meet with *River Quicungo*, where a trade is carried on by the boats of Mozambique. Before this river lies *Fogo Island*, or the Isle of Fire, so named from the light-house, which, by order of the King of Portugal, was formerly kept there burning from the 1st of July to the end of October. Fogo is the first of those small islands along that coast called ILHAS PRIMEIRAS, or the First Islands; a league and a half before you come to Fogo there is a sand bank, between which and the island you may pass in 14 or 15 fathoms, taking care to sail nearer the island than the bank. To the E. N. E. of this channel, there

there lie 2 other islands, between the first of which, named *Trees Island*, and *Isle Fogo*, there is also a bank forming two passages, with the same depth of 14 and 15 fathoms; and a league farther you fall in with *Ilha Rasa*, or Flat Island, known also by the name of Palm-trees Island. Between these isles and the main land there is a passage which extends to the E. N. E. through which all vessels may go, observing only to range along the islands in such a manner that two-thirds of the breadth of the channel should be left on the land side; you have there 10 fathoms water, and no danger but what you can see.

Eight leagues to the E. N. E. of Flat Island lies the bank of *Moma*, and in the interval a reef with many breakers, between which and the bank there is a passage, and another with 8 and 10 fathoms water between the bank and the island; from this part you can descry *Caldeira*, the first of the Angoxa Islands, in coming from the S. W. About 20 leagues to E. S. eastward of Flat Island, a bank is mentioned in several charts by the name of the English Bank, which, if not imaginary, is at least very uncertain.

From Flat Island to *Caldeira*, which lies in $17^{\circ} 40'$ South, the course is N. E. 25 leagues; the ISLES of ANGOKA, or ANGOSHA, according to the pronunciation, are four in number, with 2 banks of breakers between them. You may pass among these islands on the north side whenever you choose in 14 and 15 fathoms; but those that go between them and the main, are to leave two-thirds of the channel on the land side, and keep in 8 and 10 fathoms, oozy ground; it is not prudent, however, to pass there in the night-time.

The last of the Angoxa Islands is called *Mafamale* by the author of the *Neptune Oriental*, and *MAFAMEDE* by *Van Keulen*, *D'Arville*, and others. This island is the only point on the eastern coast of Africa we are now describing, whose situation in longitude has been ascertained with any degree of precision. Captain *Joseph Huddart*, by his observations on the 26th of August, 1784, places *Mafamede* in $16^{\circ} 21'$ latitude South, and its longitude, *per* Chronometer, in $40^{\circ} 26' 7''$ East of London. But, observes Mr. *Dalrymple*, * by Mr. *Howe's* longitude of Bombay, the Error of the Chronometer from St. Helena was at the rate of $2''$ *per* day, amounting in 25 days from *Mafamede* to Bombay, to $50''$ or $12' 30''$. This places *Mafamede* in $40^{\circ} 38' 37''$ East of London, which longitude is adopted by that learned gentleman in his Chart of the Indian Ocean.

To the N. W. of *Mafamede* is Angoxa River, very shallow, but frequented by the boats of Mozambique; 7 leagues to the East of this lies *St. Anthony's Shoal*, bearing E. by N. from the Angoxa Islands, and covered at high water; you may pass within or without this shoal, but you are not to go nearer than 7 fathoms toward the land, nor more than 11 in the offing. All the islands that have been mentioned, are small and surrounded with reefs towards the sea; none of them has more than half a league in breadth, or is above 6 miles round.

* *Memoir of a Chart of the Indian Ocean*, page 2.

Four or 5 leagues from St. Anthony's Shoal, on the Mozambique side, and over against a place called the *Curraes*, $1\frac{1}{2}$ league from the main land, lies a very dangerous rock for large ships, and which you cannot see but when you are upon it, as the sea does not break there at high water. To avoid it you must, in coming from the Angoxa Islands, steer N. E. by E. during the night, and due N. E. in the day-time, keeping in 20 fathoms water.

Fourteen or 15 leagues from this danger towards Mozambique, you descry *Mogincale*, which is a huge land, and 2 leagues in the offing lies the shoal of the same name, on which there are 3 fathoms water, with breakers at low water only, spring tides. You will pass without it at a distance of 3 or 4 leagues, if you steer E. N. E. and to know when you have doubled the shoal, it is necessary that several palm-trees on an island called Mafalane-Movya should appear to stand on the main land along the shore; and to the North of this island you see a sandy beach 4 or 5 leagues in length, ending at Bajona-point, which is the south point of Mocambo River; along this beach, known by the name of *Movinnes*, there are trees that resemble pine-trees when seen from the sea. Between Mogincale and Mocambo River, you may anchor, but you are not to go toward the land at a less depth than 15 fathoms. This precaution is necessary, on account of another shoal half a league in circuit, with $3\frac{1}{2}$ fathoms water in some places, 5 in others, and soft stony ground, which is said to lie 3 leagues off at sea before you come to the point.

They reckon from the last Angoxa Island to Mogincale point 18 leagues to the N. E.; from Mogincale to Mocambo River 8 leagues; and from Mocambo to Mozambique 4 leagues. *Mocambo River* is one league broad at its mouth, and with the tide has water enough for large vessels to go up 2 or 3 leagues; should you intend to anchor at Bajona Point, you must approach the land so as to be N. E. and S. W. of the islands of St. George and St. Yago, in 15 fathoms, sandy ground. From the north point of River Mocambo to St. Yago's Island, there is a reef on which, at low water, you see some heads of rocks; this reef is steep to, but it is not prudent to come near it. When you go to Mozambique, you sail along the coast till you see the ISLAND of MOZAMBIQUE, which is very small and not above one league in circuit. It extends from S. W. to N. E. between 2 points of the main land; the south one is called Point Mangale, and Pannoni is the name of the north-east point, off which runs a shoal with 3 islets upon it. The fortress stands on the north-east point of the island; and to the S. W. of that fortress, is the Monastery of St. Anthony, which is the mark by which you enter the harbour. On the main land there is a mountain called the Loaf, and eastward of this another called the Table; in coming from the S. W. you see these two mountains separated from each other, the Table appearing to the N. E. of the Loaf; but when you come from the northward, the Loaf is seen over the middle of the Table.

Over

Over against Mozambique Island, about $\frac{1}{2}$ a league at sea, there are two small low islands with some clumps of trees; they are surrounded with reefs, and lie N. N. E. and S. S. W. from each other; the northernmost is called St. George, and the other St. Yago; small vessels may pass between these islands to go to Mozambique, but large ships are to go North of St. George's Island, between it and the reef that runs off Cabaceira point. In sailing through this channel, care must be taken of the reef which extends to the E. N. E. of St. George's Island; and you are not to approach it in less than 7 fathoms water. As soon as you discover the beach that lies on the West of St. George's Island, and attending carefully to your lead, you may anchor on the first sandy ground you find; then firing a gun, a pilot will come from the town to carry you in.

DESCRIPTION OF THE COAST OF AFRICA

FROM MOZAMBIQUE TO THE EQUINOCTIAL LINE.

QUERIMBA ISLANDS,—CAPE DELGADO,—QUILOA,—ZANZIBAR,—
MOMBASS,—BAY FORMOSA,—PATTI, &c.

FIVE leagues to the North of Mozambique is a flat shore called Quintangone; 7 leagues beyond it lies river Quisomajugo, and 6 leagues farther the river of Fernao, or Fernand Veloso, which has a road on the west side and within the point, with 15, 20, and 25 fathoms water; this is a large river which you can enter without danger.

They reckon from it 3 leagues to the river of Pinda, off which $1\frac{1}{2}$ league from shore, there is a very dangerous reef with breakers. When you are sailing along this coast it is proper that you should keep at 2 or 3 leagues distance. On the main land over against the north point of this reef it is said there is a very fine Cove 3 leagues broad, with an islet on the north side; that ships may winter there, lying in good ground, sheltered from all winds, and find plenty of water, wood, and fish.

From Pinda to Camonco River, there are 6 leagues, and 12 from this to Sirancapa, or Sinnacapa River: the Bank of Mancabala, which runs about 20 miles parallel to the coast, and 2 leagues distant from it, begins 6 leagues to the South of the latter river, and ends at its point; between this bank and the main land you have 10, 7, 6, 4, and 3 fathoms water.

The *Picos Fragosos*, or the Craggy Peaks, begin at Pinda River, and terminate on that
of

of Sirancapa, near which their ruggedness is more remarkable; they are the best mark you can have for this coast.

From Sirancapa the distance is 8 leagues to Pembe River, where the *QUERIMBA*, or *QUERIMBOO* ISLANDS begin; they are small and woody. According to Mr. *D'Après*, the first is called *Quiriba*, the second *Fumbo*, the third *Quiluvia*, the fourth *Querimba*, which is the most considerable, but has not above 4 or 5 miles in length, and lies in $12^{\circ} 20'$ latitude South: the name of the fifth island is *Oybo*; it is the only one where you find an entrance, all the others being joined by reefs which become dry at low water. The Portuguese draughts add *Matome*, or *Matemos*, to these five islands, and between it and the reefs, which lie at its north and south ends, they mark a passage with 9 fathoms on the north, and 10 fathoms on the south side. In sailing along you may come very near these islands, they being steep to; and half a league from them you find no ground with the deep sea line. When you are coasting along *Querimba* you see palm-trees on its north point, and a sandy beach remarkably white, with a large house, which serves as a fort. You may approach the land, making use of your lead, till you distinguish that fort and the sandy beach; and when you perceive the separation between *Querimbo* and *Oybo*, and find yourself over against the palm-trees and the fort; if it is too late to enter, you may anchor in 12 fathoms on a sandy bottom, and clean ground. Weighing from this place you steer for the west point of *Oybo*, off which runs a reef toward the North, that you are to double in order to come to the anchorage. This is done by going between that reef and the south point of another extending southward of *Matemo* Island, which is seen on the north side. In this port you are sheltered from westerly winds, but fully exposed to those that come from the East. Mr. *Alexander Sibbald*, who was on this coast about 1753, says, "In going to *Querimbo* endeavour to see the northernmost shoal, which may be seen at low water; and if at high water, and you cannot see this north shoal, the water on it will be discoloured. It is high water at full and change at 4 hours:" he adds, "that *Querimbo* is known by two houses upon it, and *Oybo* by a *Palmira* tree upon it." Observe that from *Mozambique* to *Querimba* the depth of water is such that you may range the whole coast very near by day or by night, chiefly after you have passed the reef of *Pinda*, described here above.

From the entrance of *Oybo* to *CAPE DELGADO* the coast runs to the North, sometimes inclining to the East, and the distance is about 40 leagues. It has several islets, and the shore in general is bordered with a reef very steep to, between which and the land the country vessels sail from one place to another. You are not to sail along this coast without an offing of 3 or 4 leagues to avoid some rocks and shoals that lie scattered in that space; beside the land is low, and you must be very near to distinguish it clearly. The currents near *Cape Delgado*, and even in the offing, set to S. W. at the beginning of the N. E. Monsoon, but near the end they run in a contrary direction.

N

About

About 13 leagues to the north of Oybo lies the Bay of MACALOÉ, between the island of that name and the continent; you anchor in the road, which is about 2 miles broad, in 5 and 6 fathoms, mud and sand, and good holding ground. There are 2 small islands before the entrance, in the outermost of which is the watering place. The Sultan of Macaloé resides on the main near the westernmost point, called Point Niatré, and the Portuguese magazine is on the opposite side on the north point of the great island. You take a Pilot to go from the road to Piniany, the Sultan's town, before which you anchor in from 7 and 8, to 18 or 20 fathoms.

From Cape Delgado to the bay of Quiloa, the coast turning to the northwestward, makes a great bight, within which are several reefs and shoals. The town of QUILOA is situated at the bottom of the bay on a little island 5 or 6 miles long from North to South, and surrounded with a reef. There is a good passage on each side this island, with 25 or 30 fathoms water, and also good anchorage between the island and the main in 5 fathoms on the south, and 15 on the north side. The soundings in the bay are from 55 to 40 fathoms: it is near 7 leagues broad from North to South, and on its south point stands a high mosque. The north point, called in some Charts Cape Falso, is distinguished by several trees growing on a sandy reef which projects 5 or 6 miles from it to the eastward.

Between Cape Delgado and Quiloa, lies the river of MONGALLOO, whose entrance, according to a French description, is of difficult access, and not easily distinguished; at least, unless within $\frac{1}{4}$ or $\frac{1}{2}$ of a league, and clear weather. Coming from the northward at this distance, three rocks will be perceived appearing like the wreck of a ship; bring them to bear S. S. W. by compass at $\frac{1}{2}$ a league distance, and steer for them till you get within $\frac{1}{4}$ quarter of a league, keeping a point to the larboard, till you have the bay open; and then stand up the channel. The soundings are 10 and 12 fathoms, fine sand. If the wind is contrary, you anchor in the pass, and warp in. You may lie land-locked, but it will not be in the least dangerous to anchor near the village in 11 fathoms, fine sand, a little within the north point, and a little to the south of the same village.

The Moors are the proprietors of the country, and carry on a great trade, as well in blacks, which they send to Quiloa, as in ivory, which they sell to the Arabs. The blacks are very fine, and at a good price; wood there costs nothing, but water is got with difficulty.

River *Lindy* lies near Mongalloo about 12 leagues to the W. N. W. of Cape Delgado; its entrance is above 7 miles wide, with 30 fathoms water, and you anchor 6 miles within, in 12 or 13 before a village on the east side.

To the North of Quiloa the coast is bordered with islands, reefs, and shoals, several of which are dry at low water. The principal islands are those of MONFIA, ZANZIBAR, and PEMBA. Monfia, 9 or 10 leagues to the northward of Quiloa Bay, is surrounded

surrounded with many small islands: 20 leagues farther lies Zanzibar, the largest of the three, being above 15 leagues long, 3 or 4 broad, and well inhabited: 23 leagues N. by E. from Zanzibar, you meet with the island of Pemba, and to the North of this, going up the coast with the isle and town of Mombasa. Quilise is 10 leagues beyond it, and Melinda 4 or 5 leagues more to the North. Bay Formosa lies in $2^{\circ} 25'$ south latitude, and Paté or Patta 10 or 12 leagues farther up. From Patta to the Equinoctial Line the coast is lined with a multitude of islets and reefs that run above 3 miles into the sea, forming a double shore, which you are apt to take for the coast itself, when the separation is not perceived; in some places they lie about one league from the main land, and you can see the country boats sailing within. Since the Arabs have expelled the Portuguese from all the towns they had on this part of the coast, it is little frequented by Europeans. These Arabs are very treacherous, and will seize the ships whenever they find an opportunity, especially at MOMBASSA, in whose port they try to allure them. This port is situated in $3^{\circ} 30'$ latitude South, and is in a manner shut; by having a narrow and difficult entrance 6 and 8 fathoms deep; it lies all round an island 10 miles long and 3 broad, with the fortrefs of Mombasa, or Mombaze on the south side; and above it the Black Town, and the Moors Town, before which you anchor in 6 and 7 fathoms water.

Bay Formosa, or Fair Bay, as its name implies, lies on the Coast of Melinda, and near the town of that name, being 6 or 7 leagues broad, and 4 or 5 deep, with a depth of water from 25 to 10 and 8 fathoms.

PATTA, according to Captain D. Crichton, who was there in 1751, lies in latitude 2° South; it is situated at the west end of a narrow island, 20 miles long, and separated from the Continent by a channel about 1 mile in breadth. The land round it is low in most places. About 3 leagues off the island, and parallel to it, runs a reef with 4 entrances, the middle of which having been formerly used by the English, is called the *English Channel*; this is 3 fathoms deep, and narrow, as well as the Portuguese channel, which lies 4 miles to the westward of it: the 2 other entrances are at each end of the reef; the eastern one broader than the two first, is winding in for above 6 miles, having 3 fathoms water on the bar, and then from 8, 9, 7, 6, 4, and 5 to a good anchoring place at its west end; this is very dangerous from April until the latter end of August. Without it, about 8 miles to the N. E. lies the anchoring place of Guieu in 12 fathoms, sandy ground, where ships come to an anchor, and send their boat for a pilot to the island 3 miles to the westward, before they proceed to Patta.

The westernmost Channel is the widest and deepest, having from 20 to 13 fathoms water, and above 1 mile in breadth, but the swell which sets from April to August, hinders any thing from going out through it. Close to the reef you have without from 9 and 10, to 5, and within, near its edge, from 5 to 7, 6, and 5 fathoms water, as far as

the anchoring place, that lies 8 miles West from the English Channel, and above 5 miles southward of the town of Patta. It is high water there, on full and change days, half an hour after 4 o'clock, and the water rises about 9 feet, at spring tides. The variation in 1751, was $16^{\circ} 17'$ West.

DIRECTIONS FOR THE CHANNEL OF MOZAMBIQUE,
OR
THE INNER PASSAGE.

WESTERN COAST OF MADAGASCAR,—WINDS AND CURRENTS,—
BASSAS DE INDIA,—EUROPA ROCKS, &c.

AT the distance of about 100, or according to some 90 leagues from the Coast of Africa, in the narrowest interval, and of near 150 leagues, at the two extremities, lies the ISLAND of MADAGASCAR; whose body extends from S. S. W. to N. N. E. between the parallels of 12° and $25^{\circ} 36'$ of latitude South, in a length of near 300 leagues. The sea between this island and the continent, is known by the name of CHANNEL of MOZAMBIQUE, and the south part of it sometimes by that of GULF of MADAGASCAR. The navigation to and from India through that narrow sea has been called the INNER PASSAGE by the English, though the name is often applied to denote only the Channel of Mozambique; it is much the nearest way to India.

The western Coast of Madagascar is little known, St. Augustin's Bay being almost the only place resorted to; to the northward of this is Tullear Bay, of 3 or 4 leagues extent, between the main and a reef of rocks, with two entrances, one to the South, and another to the North, and 6 or 7 fathoms water. About 60 leagues farther North is Morundava, a bay and harbour, with 4 fathoms water, at the mouth of Youle River, where some trade is carried on; Matumbagh, a small trading town, lies on the coast 60 leagues North of Morundava; and above 20 leagues N. by E. from it, is Cape St. Andrew's, from whence the coast runs E. N. E. about 30 leagues to New Massalgem, called also Bolena, a good harbour, well shut in, and having 10 fathoms water. Then the coast takes a N. N. E. direction as far as Cape Natal, or Ambro, the northernmost point of Madagascar. In that length, which is about 100 leagues, it is indented with several bays and harbours.

Two Monsoons, or Seasons, are known in the Mozambique Channel; the S. W. Monsoon, which, beginning in April, continues till November, and the N. E. Monsoon that follows it, and lasts until the month of April. During the S. W. monsoon, which is the fair season, the winds blow from the S. W., S. E., as well as from the E. S. E. moderate and without violence; and along the coast you have land breezes. If storms happen, then they come from the N. N. W., N. W., West, and N. W. but though it blows very fresh, they do not last long. Off the coast you meet sometimes with winds from the north quarter. The currents in this season run towards the South, along Madagascar; they sometimes, but rarely, set towards the North.

The N. E. Monsoon begins to be felt in the first days of November to the North of Madagascar, as well as near the Comoro Islands; but towards St. Augustin's Bay it commences only at the end of the month. This bay is dangerous in that season, because the winds, which come frequently from the North and N. W. blow directly into it and make there a great swell.

The same N. E. monsoon extends rarely further South than St. Augustin's Bay, and this happens only accidentally, and when the disposition of the weather foretels a storm. The S. E. winds prevail in the South part of Madagascar during the whole year. At the end of November, in December, January, and February, this wind blows very strong, and when it veers to the South, or S. W. it is accompanied with rain.

It is chiefly during the N. E. monsoon that the most violent storms arise: when the S. E. and S. W. winds, which prevail without, are strong and turn to the North, they meet with the N. E. and N. W. winds, violent whirls and hurricanes are then produced by their mutual shock, the sky is overclouded, the rain heavy, and the sea much swelled and agitated. During this monsoon the currents in the Mozambique channel set towards the South all along the African Coast, and even in the offing, their common velocity being 7 or 8 leagues in 24 hours; but on the coast of Madagascar their run is on the contrary way, and they set towards the North.

Ships which are bound to the Inner Passage, after they have doubled the Cape of Good Hope, and ascertained their position, either by the sight of land, sounding on the Bank of Lagullas, or by a good observation, are to continue an easterly course, and not to leave the 35th or 36th parallel of latitude before they come as far as the 34th or 35th degree of longitude East of London; or till they have increased their variation to 25 or 26° 10'. They then steer East by compass till they are in the 37th degree of longitude, not under the 35th parallel of latitude. Hereabout the strong westerly and north-westerly winds begin to moderate; they become variable, being frequently from the S. S. W. and sometimes from the S. E. Thence having steered E. by N. or E. N. E. until the 39° of

* In 1784, the variation was 24° 48' West, in latitude 25° 10' South, and longitude 38° 50' East of London.

longitude,

longitude, vessels shape their course so as to make 41° of longitude, in 28° of latitude; and afterwards sailing North as far as the 25° of latitude, they haul in for the land of Madagascar, and make it in between $24^{\circ} 20'$ and $23^{\circ} 40'$ which is a part of the coast pretty clear, being low near the sea, but rising gradually inland to a tolerable height; it may be descried from the mast-head at 9 or 10 leagues, and from the deck at 6 leagues distance.

The reason for keeping so far to the eastward, especially in May, is to avoid the light winds, calms, &c. on the African shore, very common at that time; besides the currents run very strong southerly the nearer you are in shore; and later in the year, it is also very common, from 30° South, to the south end of Madagascar, to meet with winds from East to S. E. and this sometimes, to timorous men, occasions much delay, as they do not choose to pass the Bassas de India, before they make the land, which, in our opinion, is over cautious. When the wind is easterly, observe only to pass from $22^{\circ} 40'$ to $21^{\circ} 20'$ latitude in day light, if possible; it includes the latitudes of the Bassas de India, and the Europa Rocks. When past them, steer along shore all night, and inshore all day, until by lunar observation you make 42° longitude; then a north course until under $17^{\circ} 50'$, afterwards a N. E. course will carry you on the Pracel Bank in latitude from $17^{\circ} 40'$ to $17^{\circ} 20'$: it is preferable to get soundings on this part of the bank, because they are more regular. Should you get them to the southward, you ought to haul off N. W. by N. until you lose them, and then keep a course North, as far as about 16° latitude. Afterwards you are to steer so as to make 2° easting; by the time you come into $12^{\circ} 55'$ you then will make Mayotta N. N. E. It is necessary, in the early, or late part of the year, to keep to the eastward, if you mean to go into Johanna, as the currents set to the westward; but in the height of the monsoon it is needless.

In approaching Madagascar you must not come during the night in the parallel of the south part of this island, that is, in $25^{\circ} 36'$ latitude, for fear, in case of an unforeseen error towards the East, of meeting with the coast between Cape St. Mary and the Star Bank. You get soundings 8 or 9 leagues in the offing from 40 to 25 fathoms, sand and gravel. Four or 5 leagues to the South of Cape St. Mary's, there are some breakers which have been seen by the ship *Barker*, June 13th, 1780: the channel between them and the Cape is clear, and has 20 fathoms water.

The STAR BANK lies 24 leagues W. N. W. from Cape St. Mary's; it is above 10 leagues long, steep to on the west side, and less than a mile from the rocks, you have from 80 to 90 fathoms water: several ships have passed between it and the land, the passage being 3 leagues broad, and there is no danger if you keep in mid-channel. To the N. W. of this bank are 2 small detached islands, lately seen by *Monf. De Keritvay*, which, according to this officer, lie in about $24^{\circ} 55'$, and are surrounded with rocks and breakers.

The coast from the latitude of $24^{\circ} 20'$, mentioned above, to St. Augustin's Bay, lies

lies N. by W. and S. by E. with a reef parallel to the shore, at 2 or 3 miles distance, upon which the sea breaks in most places, but it is very smooth within.

You are to sail along the coast, and 2 leagues from it, until you raise SANDY ISLAND, a small low island at the entrance of St. Augustin's Bay to the S. W. with some shrubs, and a very white sandy beach; a ledge of rocks lies S. W. from it above 2 miles in length, with foul ground, and breakers all round; you must sail to the northward of the island, and borrow upon it, to avoid the shoals on the north side of St. Augustin's Bay. But before you come to Sandy Island you will see the land about St. Augustin's Bay, which is pretty high near the sea, but much higher at some distance inland; and you distinguish a table hill on the north side of the bay at a great distance in the country, which has been called *Westminster-Hall* from its resemblance to the roof of that building.

The BASSAS DE INDIA* a most dangerous shoal, are very low land, in length about 10 or 12 miles, and near 5 or 6 in breadth; they are surrounded with a sandy beach, rocks, and breakers in every part; the trees that grow upon them are not higher than a high Catamaran under sail, with which several parts of these have some resemblance; there are 2 or 3 small hummocks on their northernmost end, but the shoal cannot be seen above 5 or 6 miles from a ship's deck, or above 9 or 10 miles from the mast-head; you have no soundings within 3 miles of them.

To the N. W. above 26 leagues of these rocks, lie some others, sometimes mistaken for the Bassas de India, which are called EUROPA ROCKS, having been first seen by the ship of that name, in whose Journal we find them mentioned as follows: "December the 24th, 1774, saw some rocks from the poop, bearing S. W. by S. to S. E. by S., distance 2 or 3 leagues, their latitude in $21^{\circ} 28'$, and $5'$ East of Mozambique, the biggest about the size of a long-boat, and the sea breaking over them at all times, which makes it a very dangerous reef†. On the 25th saw the Bassas de India‡, North $39^{\circ} 23'$ West, distance 80 miles.

" Bassas

* These shoals were named by the Portuguese discoverers, *Bancos da India*, or the "Banks of the Jewels;" they are still called so by that nation, as well as by all the European navigators, except those of our country, where the first Charts of these parts copied from the Portuguese, having changed the letter *a* into an *n*, substituted the word *India* for that of *India*.

† The BASSAS DE INDIA of *Nicholson*, and the EUROPA ROCKS, according to a very experienced Commander, must be the same shoal; they were seen by the *Royal Admiral* the 23d of August, 1784, and nothing was perceived above water, except scattered rocks like hay-ricks, though probably some part of the flat may dry at low water, and at the extremity the sea breaks heavy all round. Captain *Huddart* sent his pinnace close to the back of the surf, which sailed round the south and west sides in from 3 to 12 fathoms, within 20 or 30 yards of the breakers, while the ship kept from about a mile to $1\frac{1}{2}$ mile off the breakers, and had no soundings from 40 to 70 fathoms, for an extent of 14 miles on the said south and west sides; but could not ascertain how far it might extend to the eastward. The part visible extended from E. S. E. to W. S. W.

13 miles,

‡ This must mean the Rocks, or *Nicholson's* Bassas de India, seen the 24th.

" Bassas de India { Latitude $22^{\circ} 30'$ South.
 Longitude, supposed, $41^{\circ} 40'$ East from Greenwich.
 " Variation 22° West."

About 35 leagues to the eastward of the Europa Rocks, 24 N. E. of the Bassas de India Rocks, and above 20 leagues from the Coast of Madagascar, lies the SUSSEX ROCK *, named after the ship of that name, by which it was discovered.

13 miles, and from N. N. E. to S. S. W. 6 miles. The northernmost extreme is in latitude $21^{\circ} 28'$ South, and the westernmost, per mean of 12 observations of the moon, $40^{\circ} 8'$ East of London, and by chronometer $39^{\circ} 58'$. Colonel Harper went in the pinnace with hooks and lines, and caught a large quantity of fish, which were found very good.

" On the 26 the *Royal Admiral* made the northernmost of the small islands on the Coast of Angosa, in latitude $16^{\circ} 21\frac{1}{2}'$ South, and by chronometer in $22\frac{1}{2}'$ longitude East of the above shoal.

" The *Royal Admiral* had soundings on St. Anthony's Shoal in 13 fathoms, $10\frac{1}{2}$ leagues North, 36° East, true course, or North 56° per compass, and 2 leagues from the shore. By the Chart, the above island appears to lie 20 leagues to the westward of Mozambique, therefore the shoal must be near 30 leagues to the westward of Mozambique.

" The *Europa* agrees in latitude, but differs widely in meridian distance; indeed the currents are often strong in this part of the channel; for between the shoal and the island these currents set the *Royal Admiral* 51 miles to the westward in 3 days.

" The variation at the Bassas de India, or the above shoal, was $23^{\circ} 50'$, and at the island $20^{\circ} 40'$ West."

* Probably this rock is one of those which are described in the above notes.

I N S T R U C T I O N S
FOR SAILING INTO
ST. A U G U S T I N ' S B A Y,
AND THENCE TO THE COMORO ISLANDS.

CHESTERFIELD SHOAL,—ST. CHRISTOPHER'S, JOHN DE NOVA,
AND COFFIN ISLANDS, &c.

ST. AUGUSTIN'S BAY lies almost under the Tropic of Capricorn, in $23^{\circ} 34'$ latitude South, and $44^{\circ} 13'$ east longitude from London, according to the observations of the Hon. *Thomas Howe*.

Having passed Sandy Island in 15 or 13 fathoms water, and steering to the eastward, you will see a high land close to the sea, on the south side the bay, and another high land at some distance in the country; the entrance of River Onglahé, which the English have named *Dartmouth River*, being then open to you, it will serve as a leading mark to run up and clear the reef, as well as all danger. The north point of this river is a steep bluff, and the south one, which is also steep, has a low woody point running out to the northward; you keep the high bluff point a sail's breadth open with the low woody point, then it will bear E. $\frac{1}{4}$ S.

As you run to the eastward, after you have lost soundings from Sandy Island, you will have none till you come off the first low point on the southern shore. Off this there is a small shoal of breakers with 9 and 10 fathoms close to them, and 14 or 15 fathoms 2 cables length without; it deepens gradually from 14 to 28 fathoms, $\frac{1}{4}$ of a mile to the northward of this point, and then no soundings; observe that the leading mark must be kept a sail's breadth open in passing these breakers, which you should do in 14 or 15 fathoms.

There is good anchoring in, from 18 to 20 fathoms, the *Tent Rock* on the south shore bearing from S. $\frac{1}{4}$ E. to S. $\frac{1}{4}$ W.; the other mark, as follows; viz. at some distance from the low woody point the land rises up to a steep bluff, something like that on the north side, but much higher; if you bring those 2 bluffs in one, or touching, or a little shut in, and the Tent Rock, from S. $\frac{1}{4}$ E. to S. $\frac{1}{4}$ W., it is a very good place to lie in; with these bearings you will have from 10 to 12 fathoms water, and a very good birth, with good holding ground, clay and mud.

O

Here

Here you should moor East and West that you may ride between the tow, and with an open hawse when the wind comes to the northward and blows hard, which sometimes happens; should you moor North and South, in some places, your outer anchor would lie in very deep water.

No ship should let go her anchor in more than 15 or 16 fathoms, unless it is with the Tent Rock, bearing S. $\frac{1}{2}$ East, and then in not more than 18 or 20 fathoms; for the bank in most places goes off very suddenly from 20 or 24 fathoms to no soundings. The Tent Rock, bearing from S. $\frac{1}{2}$ E. to S. $\frac{1}{2}$ W. in from 8 to 12 fathoms water, as said above, is the best place for a ship to lie in, since there is good ground and most drift.

In St. Augustin's Bay, you may get wood and water at the mouth of the river, where there is a bar with only 2 feet at low tide; you get also plenty of good beef, mutton, and fowls, only vegetables are very scarce. The inhabitants are hospitable, but artful and prone to revenge.—It flows here at full and change 2 hours 15 minutes, and the perpendicular rise is 8 feet on spring tides.

When you sail from St. Augustin's Bay to India, you generally run to the westward and make about 50' or 52' west longitude from Sandy Island, and then shape your course due North, until under 17° 50', after which, as we have already observed, a N. E. course by compass will carry you on the PRACEL BANK, which extends all along that part of Madagascar, between the 18th and 16th parallels of latitude. On this bank the soundings are very uneven, but keeping in 20 fathoms, is a good depth until you lose them; you then proceed according to the directions given in the preceding section; with that course you avoid the Suffex Rock, and ST. CHRISTOPHER'S ISLAND, a small low sandy island, with a few breakers round it, in 17° latitude, and 14 leagues distant from the Coast of Madagascar, whose description we find in the Journal of the *Portfield*, June 3d, 1755, as follows: "The Island of St. Christopher is very low, with some trees on the northernmost part of it: the north-west part is a large sandy beach, which looks very white; but when you are at a great distance from it, it appears like chalk cliffs, which I suppose to be sand blown upon the land: to the northward are breakers that run out above 2 miles from the island. I think those who come this way, in prudence should lie to for the said island, though they have made Madagascar, for it is so low, that I believe in the clearest weather it cannot be seen a mile off in the night."

By making your course N. E. when in latitude 16° 40' South, and longitude made from Sandy Island about 25'; you avoid likewise that dangerous shoal called CHESTERFIELD SHOAL, which was seen in August, 1756, by the *Chesterfield* Indiaman, in company with the *Walpole* and *Hector*. This lies in 16° 13' latitude, and about 25' or 30' West of the meridian of Sandy Island, being thus described in the *Chesterfield's* Log-book:

"At 5 A. M. saw breakers from the mast-head right a-head of us; hauled our wind in order to go to the westward of them, though I perceived the passage to the eastward: the *Walpole* and *Hector* did the same, and I believe were nearer to them than we, though we

were not half a cable's length from the White-heads. This shoal appears to be a mile long, and $\frac{1}{2}$ a mile broad, and lies near East and West; there is on it a small rock which is dry, and a little to the eastward of that rock, a patch of reddish sand that is dry also, against which the sea broke furiously, though moderate weather; and there was a confused sea where the ship went through."

These ships had 30 fathoms water when they first saw the shoal, and were steering N. E. The breakers being right a-head of them; they had then 19, 20, 10 $\frac{1}{2}$, 7, and 6 fathoms; and in this latter depth, passed within half a cable's length of the breakers, after which they had 7 $\frac{1}{2}$, 12, and 20 fathoms, 2 or 3 leagues to the westward of the shoal, and then no ground at 40 fathoms.

They were at noon in $15^{\circ} 59'$ latitude South, by observation; and the longitude made from Westminster-Hall, was $58'$ West; they found a northerly current which set the ship 12 miles to the northward of the reckoning. In working their course and distance from 5 A. M. to noon, with a proper allowance for the north current, the first will be made West 36° North, and the distance 24 miles from the breakers on the shoal, by which the shoal appears to lie in $16^{\circ} 13'$ latitude South, and $38'$ longitude West from Westminster-Hall.

The same ship saw the evening before at 6 P. M. St. Christopher's Island bearing East, and 2 or 3 leagues distant. In working likewise their course and distance from that island, with the bearings from it, at 6 P. M. and allowing for the northerly current; the shoal they discovered, and which is now called CHESTERFIELD SHOAL, lies 24 leagues N. 5° E. from St. Christopher's.

About 25 leagues W. by S. from St. Christopher's, in $17^{\circ} 15'$ latitude South, and $1^{\circ} 28'$ West from the meridian of Johanna, lies the small Island of JOHN DE NOVA; it was seen June 27th, 1740, and June 7th, 1769, by the French ships *La Paix*, and *le Marquis de Sancé*, the former having got, at the distance of 10 leagues S. by E. from it, uneven soundings from 7 to 15, 20, and 30 fathoms water. This island, about 3 miles long from North to South, rises a little in the middle, where it is covered with shrubs; on the south side there are breakers, which run off 2 miles, with a black rock at the end 10 or 11 feet high; but towards the North they extend farther than 1 mile, and are remarkable by a small white rock, which being 2 or 3 miles distant, appear like a ship under sail.

The longitude made from Sandy Island to the latitude 16° or $16^{\circ} 20'$ South, should not be more than $12'$ West, and the variation 20° West. From this latitude you may make your longitude easterly, so that in about $13^{\circ} 12'$ South, you should come to about $52'$ longitude East from Sandy Island, with a variation of $19^{\circ} 30'$ West, in which latitude, longitude, and variation, if the weather be clear, you will see the remarkable hill, called *Valentine's Peak*, that lies on the south side of Mayotta, the southernmost of the Comoro Islands; it will then bear about East from you 8 or 9 leagues distant.

Hereabout you meet with a strong southerly current, which will set the ship from 20

to 24 miles to the southward in 24 hours; make your course N. N. E. 4 or 5 leagues, and the island Johanna will be perceived bearing about N. N. E. $\frac{1}{2}$ E. 11 or 12 leagues distant; it is much higher land than Mayotta, or Mohilla, and distinguished by a very high peak in the middle: then Mayotta will bear E. by S.

Steer then for the west part of Johanna, and you will soon descry Mohilla to the N. W. Ships always go between Johanna and Mohilla, within 2 or 3 miles of the west part of the former; but if by some unforeseen current they should be carried on the east side of Mayotta, they must take care of a reef lying to the E. N. E. 4 or 5 leagues off, and whose bearings have been observed as follows: viz. When the north point of Mayotta was bearing N. W. by N. by compass, and the south point S. W. by W. 6 or 7 leagues, then the reef bore N. W. by W. distant 2 leagues.

REMARKS

REMARKS on a SHOAL on which the TAUNTON-CASTLE,
James Urmston, Commander, grounded in the Mozambique Channel.

Courfe.	D.	N. E.	MD.	Lat. P.	X. Lo.	Lo. in	Bearing and Distance.
N. 34 E.	66	55 37	34 14	18 00	39	41 42	East.
H.	Courses.	K.	F.	Winds, &c.		Monday 18th April, 1791.	
1	N. N. E.	4		E. by S. light air and fair.		Light breezes, with hot sultry weather. At 9, A. M. perceived the water discoloured, went to heave the ship to, to found. She struck in $\frac{1}{3}$ fathoms, on hard sand and coral; tried to heave her in stays but without effect. Handed sails and got the boats out and founded; laid a warp out to the S. W. in 8 fathoms; hove taught and observed the water to rise; the ship swang to the hawse at $\frac{1}{2}$ past 11, and by noon hove her into 12 fathoms water, without receiving any material damage. Latitude, per double altitude, 17° 16' South.	
2		3	2	Variable.			
3	North	2		Tacked			
4	N. by W.	2		N. by E. per Azth. 20 26			
5	East	2		20 46 } W.			
6		1	6	Per Amplitude 20 56			
7	E. N. E.	2	4	N. by W.			
8		2	5	N. N. W.			
9		3					
10		2	6	W. N. W.			
11		3	4	W. by S. Cloudy			
12		3					
1		2	2				
2		2					
3		2		S. S. E.			
4		2	4				
5		3					
6	N. E.	3	4	Saw the land bearing			
7	N. E. $\frac{1}{2}$ N.	5		E. N. E. from the mast-			
8	N. N. E.	5	3	head.			
9	N. E. b. N.	5		When on shore, the			
10	}			island bore E. N. E. dist.			
11				5 miles, sand bank N. N. E.			
12				dist. 6 miles.			
		63		Miles.			
						X. Lo.	Lo. in Bearing and Distance.

MONDAY 18th April, 1791. During these 24 hours hot, sultry weather, with light winds. From our chronometer and reckoning, expecting to make the island of St. Christopher's, kept a good look out, but during the night the wind coming from the eastward found it necessary to tack; the wind veering round to the northward, she laid up East and E. N. E. which was the course we intended to steer for the purpose of making the land. At $\frac{1}{2}$ past 6, A. M. saw the land from the mast-head, bearing E. N. E. 6 leagues, something like a sail; the rate of the ship's going was at that time about 4 miles *per* hour, the

the water remarkably smooth. At 8, A. M. the latitude worked up, per account, was $17^{\circ} 26'$ South; longitude, per account, $42^{\circ} 11'$; East longitude worked up from our chronometer, since the last noon, $43^{\circ} 03'$; by a series of good sights, per $\odot$ and $\ominus$ brought forward from Wednesday, 13th April, 1791. $42^{\circ} 36'$ East longitude, brought forward from the mean of 6 sights, per $\ominus$ and $\odot$ Antares. At 9, P. M. $44^{\circ} 07'$ East; meridian distance East of Trinidad $57^{\circ} 58'$. At $\frac{1}{2}$ past 8, A. M. perceived the water much discoloured; hove to, to sound, but in the act of heaving to, the ship struck and grounded on a bed of coral; every effort was used to cast her off, but without effect.

A small low island bearing E. N. E. a small sand-bank N. N. E. distant about 2 or 3 miles, distant from the small island about 3 miles. Immediately furled all our sails, and got the boats out; sent the cutter and jolly-boat to sound round the ship, found deep water in the south-west quarter, but to the north-west the water was very shoal, so shoal, the boat had like to a grounded; to the southward found a $\frac{1}{2}$ less 4 fathoms; got the kedge and nine inch hawser into the long-boat, and carried it to the south-west quarter, having previously laid a buoy in 8 fathoms water, as a guide for the ship; hove her off into deep water; providentially the water proved remarkably fine, and we were happy in getting off without any material damage happening to the ship. I observed at the time of the long-boat's being carried out, a strong N. E. current, and have much reason to suppose that the flux and reflux of the sea here is considerable, for at the time of her grounding the small sand-bank which bore N. N. E. was hardly discernible from the mast-head when she came a-float. The ship came afloat about noon, and the confusion which such a circumstance would naturally throw us into, had made us neglect taking a meridian altitude, but we had a latitude by a double altitude, which made $17^{\circ} 16'$ South. At $2^h 20^m$, past meridian, we had some sights, per chronometer, which made in the longitude of $41^{\circ} 56'$ East; we were at this time riding out kedge in 12 fathoms water. The island bore E. S. E. distant about 3 or 4 miles. A high peak of land on Madagascar extending to the southward extremes of it from S. E. by S. $\frac{1}{4}$ S. and distant about 12 leagues. At $\frac{1}{2}$ past 4 P. M. weighed the kedge, and stood away South, and S. by W. with regular soundings from 12 to 15 fathoms, when we came to with the small bower. The island bore N. by E. distant about 11 or 12 miles. The extremes of Madagascar, from the mast-head, from N. E. $\frac{1}{4}$ E. to S. S. E. distant about 10 or 12 leagues, in 13 fathoms, mud and sand; the same bearings from the poop at noon. At 9 A. M. sent the cutter to sound, with the second officer upon duty. Here follows the report he made of the channel:

"After clearing the ship we steered East, the ship then bore about W. by S. distant about a $\frac{1}{4}$ of a mile; hove a cast of lead, 12 fathoms; the ship bore W. S. W. we were then going at the rate of $3^k 4^l$ per hour, sounded 12 fathoms; the ship bore S. W. $\frac{1}{4}$ W., the peak on Madagascar bearing E. by S. The extremes of the land from

from S. E. by E. to E. by S. At $\frac{3}{4}$ past 9 A. M. distant from the ship about a mile, the island N. $\frac{1}{2}$ W. distant 4 leagues, sounded 12 fathoms; the ship bore S. W. about $1\frac{1}{4}$ mile; extremes of the land to the southward East to E. S. E. sounded $10\frac{1}{4}$ fathoms, the ship S. W. by W. about $1\frac{1}{4}$ mile. The island N. by W. $\frac{1}{2}$ W. distant about 4 leagues. The peak E. by S. sounded 10 fathoms. The ship S. W. $\frac{1}{2}$ W. distant about 2 miles, sounded 9 fathoms. The Ship S. W. $\frac{1}{2}$ W. distant 3 miles. At 10 A. M. sounded $7\frac{1}{2}$ fathoms. The ship S. W. $\frac{1}{2}$ W. The island N. N. W. $\frac{1}{2}$ W. The extremes of the island of Madagascar from S. E. to N. E. by E. distant from the ship about $3\frac{1}{2}$ miles, sounded 8 fathoms. The ship S. W. by W. the bottom hitherto seemed sandy, sounded 7 fathoms. The ship W. S. W. the low land from E. S. E. to N. E. distance about $1\frac{1}{4}$ mile, several casts off land all 7 fathoms; deepened our water from 7 fathoms to $\frac{1}{2}$ 7; running in for the land, pretty regular soundings from $\frac{1}{2}$ less 8 to 7 fathoms for about $1\frac{1}{4}$ mile; the ship bore W. S. W. $4\frac{1}{2}$ miles: kept standing in for the land, the soundings still continue the same from 7 to $7\frac{1}{2}$. The island N. W. by N. distance about 3 leagues, sandy bottom all the way; shoaled water $\frac{1}{2}$ less 7 fathoms hauled off N. N. E. had 7 fathoms, the ship W. S. W. distant about 6 miles, pretty regular soundings from 7 fathoms to $7\frac{1}{2}$, sandy bottom; sounded 7 fathoms, soft bottom; $7\frac{1}{2}$ blue mud; $7\frac{1}{2}$ soft bottom; $7\frac{1}{2}$ stiff ground. The ship S. W. $\frac{1}{2}$ W. $7\frac{1}{2}$ soft bottom; regular soundings from $7\frac{1}{2}$ to 7 fathoms, soft bottom. Steering along shore N. by E. still continue our regular soundings from 7 to $7\frac{1}{2}$, soft ground, the ship W. S. W. distant about 8 miles $\frac{1}{2}$ 7 fathoms, soft ground about mid-channel. The channel N. W. by N. extremes of the low land from E. N. E. to S. E. by S. distant off the low land about $1\frac{1}{2}$ mile; the ship W. S. W.; soundings $\frac{1}{2}$ 7 fathoms, soft ground. At the time of the taking of the bearings in mid-channel, it wanted a $\frac{1}{4}$ of eleven A. M. from our grounding yesterday, suppose it must be low water. Still continued our soundings of $\frac{1}{2}$ 7 to 7 fathoms, soft ground. The ship bears S. W. by W. distant 9 miles, thick water, with a quantity of weed, 7 fathoms, soft ground. The ship S. W. $\frac{1}{2}$ W. the island N. W. extremes of Madagascar from E. N. E. to S. E. by E. going at the rate of 5^k per hour, shoaled $6\frac{1}{2}$ fathoms, soft ground; hauled off from the island N. W. $\frac{1}{2}$ W. $5\frac{1}{2}$ fathoms, sand. Steered North, found our water shoal as we hauled in for Madagascar, 5 fathoms, sand; the island N. W. $\frac{1}{2}$ W. 5 fathoms, deepened as we hauled to the island 6 fathoms, $\frac{1}{2}$ 5 fathoms, hard ground. Steered N. N. W. sounded $3\frac{1}{2}$ fathoms; bore up N. N. E. 4 fathoms, $\frac{1}{2}$ 4 fathoms; hauled up N. E. $\frac{1}{2}$ less 4 fathoms, sandy bottom, $4\frac{1}{2}$, the ship S. W. $\frac{1}{2}$, 4 fathoms; found our water shoal, kept steering N. E. by E. $4\frac{1}{2}$ fathoms, sandy bottom. Deepened to 5 fathoms; deepened from $6\frac{1}{2}$ to $7\frac{1}{2}$ fathoms, soft ground; hauled up E. N. E. 7 fathoms, soft ground. Still continue the same soundings, having got into deep water again; hauled away N. E. by E. shoaled to $6\frac{1}{2}$ fathoms, the island W. N. W. 6 fathoms, soft ground, $5\frac{1}{2}$ fathoms, steered E. N. E. $5\frac{1}{2}$ fathoms, had a
meridian

meridian altitude $17^{\circ} 28'$ South, the ship bore S. W. distant 10 miles, found a strong N. E. current, which obliged us to come to an anchor."

In examining some Journals, and from the difference of our soundings, with those which are laid down in the Charts, we find this island cannot be St. Christopher's, but must be COFFIN ISLAND, on the same parallel of latitude, but $1\frac{1}{2}$ degree to the eastward of St. Christopher's. Having sight for the longitude per $\odot$ and ϵ . So late as Wednesday the 13th instant, the watch agreeing with those sights, it made us not place that degree of confidence in the observations per ϵ and $\odot$ Antares, which we had 12 hours before we struck, and work up to 8 A. M. made $44^{\circ} 07'$ East of Greenwich. We find those sights must have been very good, as the bank we have sounded along must be the same which is mentioned in the Charts to have very irregular soundings, and many dangerous places. We are convinced there is a channel in the mid-way, between Coffin Island and Madagascar; for while we continued in the boat, in the mid-channel, we found very regular soundings from 7 to $\frac{1}{2}$ 5 fathoms, but bordering any nearer either of the islands, found very shoal water: a course of E. S. E. with the precaution of a boat a-head, I think might carry the ship through clear of all dangers.

While at anchor, the small island bore N. by E. distant about 4 leagues.

Wednesday, 20th April, 1791.

THE COMORO ISLANDS,

AND DIRECTIONS FOR SAILING INTO THEIR ROADS.

COMORO,—MOHILLA,—MAYOTTA,—JOHANNA.

DANGERS TO THE EASTWARD AND WESTWARD OF THE COMORO ISLANDS.

THE COMORO ISLANDS are four in number, viz. Comoro, which gives its name to the rest, Mohilla, Mayotta, and Johanna; they are all very high, and seen at a great distance in clear weather: the length of each of them is between 6 and 8 leagues; the breadth from 4 to 5; their inhabitants, who are Mahometans, are the descendants of Arabs, and a courteous and civil people. COMORO, called also *Angazicha*, is the largest and highest of these islands; as you come near its westernmost point, you will descry a small round island, not unlike that at Johanna, which you must round, and steer along shore

to

to the northernmost end of the island, to which you give a birth of 2 miles; when round the point haul in for the land, steering N. E. and N. E. by N., and when you bring a black bluff point S. by W. $\frac{1}{2}$ W. and the easternmost land in sight E. by N.; you may then anchor in 16 fathoms, sandy ground; here are reefs to the eastward and westward of you; lie your best bower to the westward for the fresh gales at S. W. you will lie about 1 mile at high water, and $\frac{1}{2}$ a mile at low water from the shore.

When you are getting round the north point of the island, it is necessary you should hoist out all your boats in readiness for towing, as the high land totally excludes you from the monsoon, and you are subject to nothing but calms and light airs, added to which there is a tide here which ebbs and flows to a prodigious degree; "Whereby," says Captain C. W. Webber, Jun. of the *Oxford*, 1759, "I found it extremely difficult to get in near enough to lay hold of anchor ground; for it is steep to, till you come upon the bank, which does not descend with an even or gradual declivity from the shore, but goes off almost perpendicularly at once, and close to it, before you get soundings with 30 fathoms, you will not be able to find ground with 70 or 80, which I believe is the case all round the island at the distance of $1\frac{1}{2}$ mile, or 2 miles from the shore. The place of anchoring would be very dangerous was it liable to any gales of wind, but it is entirely sheltered from the monsoon; and I believe there very seldom happens any gale of wind from other quarters strong enough to endanger a ship.

"The island has plenty of very good bullocks, sheep, goats, oranges and lemons, plantains, &c. but there is a great scarcity of water, and near the King's town; inso-much that I was obliged to send water from the ship for the use of my people on shore." The following particulars concerning this island are taken from the *Log* of the *Suffolk*, Captain C. Lewin, who was there also in 1759.

Bearings at anchor in 24 fathoms, sandy ground off Comoro; King's-Town about 2 small miles E. $\frac{1}{2}$ S. a black bluff point like two rocky islands, S. S. W. the easternmost land E. by N.

"The town is large and full of cocoa-nut trees, with a fine smooth sandy beach before it; it is the only place where we could land; shoal water runs off about $\frac{1}{2}$ of a mile, and at low tide you cannot come off with your boat. Whenever you see this town send boats a-head, for as the shore is bold in all other places, you would have no thoughts of foul ground off such a fine sandy beach.

"The first soundings we had were 35, then 25 fathoms when anchored. Latitude observed in the road, $11^{\circ} 18'$ South. When you have 12 fathoms, you are close to the reef. We lay about a cable's length too near the King's Town, and had we continued longer at the island would have moved.

"The people at Comoro are very civil; the price of bullocks, settled with the King, is from 4 to 6 dollars; there are here sheep, goats, &c. but no water to be had. The King offered cowries, rice, &c.

"Of all the islands, Johanna, Comoro, and Mohilla, I give the preference to the latter."

About 16 leagues S. E. by S. from Comoro, lies MOHILLA, or *Mobaly*, and *Moallee*. The best road, according to *Van Keulen's* description, is on the south side of the isle, behind some small islands, round which is a coral reef; you stand over the reef, the least water being 8 or 9 fathoms, and the ground clearly seen, but there is no danger. Being over the reef you get 45, 43, and 40 fathoms, oozy ground, and 38, 36, 30, fine sand, viz. To the eastward of the small islands, where you anchor; besides this there is another anchoring place close to the shore in 20 fathoms off the north point of the island, and a third on the east side, where refreshments may be had.

Captain *William Wilson*, of the *Suffolk*, having been there in May, 1756, an extract of his Journal will acquaint us more particularly with the island.

"28th of May, 1756, latitude 12° South, at noon, made long. from Mozambique home to Johanna $3^{\circ} 15'$ East. The extremes of Mohilla from E. $\frac{1}{4}$ N. to N. N. E. Distant from the small islands to the S. W. of it 4 miles. The high land of Comoro North.

"29th fair weather, the first part a pleasant moderate gale; continue rounding the island with a deep sea line going, but got no ground with 40, 50, and 60 fathoms; gave the islands to the S. W. of Mohilla a birth of 4 or 5 miles, and when clear of them, hauled in for the north-west end of Mohilla. About 2 miles short of the north-west point of the island, there is a black rock, which is always above water, and lies about 2 miles from the shore; we kept about 2 miles without it, and had no ground 30 or 40 fathoms. From the north-west point of Mohilla there is a reef of rocks above water, which runs out about $\frac{1}{2}$ mile; we kept $\frac{1}{2}$ mile without them, and had no ground 30 fathoms; being clear of the point, and opening the land to the eastward, hauled in for ditto, and soon got soundings 30 fathoms, small stones and coral, which shoaled gradually to 15, we then edged away into 24; seeing a small town on a bluff hillock close to the sea, sent our pinnace on shore to enquire for the watering place, but being much short of the place laid down in the Waggoner, continued standing on. The pinnace returned and informed us that we might have water and provisions where they had landed; having shot past, tacked, and stood in with our boats, sounding between us and the shore.

"At 6 P. M. came to with the small bower in 24 fathoms, and moored with the stream to the northward in 26 fathoms, small stones, shells and coral; distance off shore $\frac{1}{2}$ of a mile: when anchored the north-west point of Mohilla bore W. S. W. the easternmost land E. by S. $\frac{1}{4}$ South, and the town S. S. W.

"At day break sent Mr. *Jackson*, our second mate, in the pinnace to examine the coast between this and the King's Town, &c.

"At sun-rise sent the long-boat ashore with casks, and rafted with the small boats; in the mean

mean time went ashore to see the watering place; found it to be about 200 yards from the beach, up an easy ascent, but the water is in a declivity, which seems to have been worn by torrents from the hills, about 12 feet deep, and being too steep to roll our casks up, we made use of our engine to fill them, whence they were rolled with great ease from the beach, which is a soft sand. The run of water, which is clear, and constant from the mountains down between the rocks, is lost about 10 yards below where we filled in the rocks and sand, and may be observed to ooze out of the beach at low water.

" We found an East and West moon to make full sea on the change. The stream sets along shore, the flood to the westward, but changes considerably before the water has done rising, as does the stream to the eastward before it has done falling. The water rises on the new moon 15 feet, and a reef of rocks runs from the point whereon the town stands, across the little bay on which the watering place is, to two rocks to the eastward, which are always above water, and dries dry; this prevents your boats working the last quarter ebb, and the first quarter flood."

30th May, Mr. *Jackson* returned from his survey, and informed us, " That the King's Town is about 4 leagues to the S. E. by S., the coast between us and it very dangerous, several reefs of rocks running far out into the sea; that a ship cannot lie nearer than 2 miles from the land off the King's Town; that there is a large surf on the shore, and that boats cannot go in after half ebb. The watering place is a mile beyond the town, and is not so convenient as where we are filling, having a chopping sea, which prevented the boats rowing. He landed and walked," he thinks, " 4 miles farther along shore to the S. S. E. when he came to a large run of water, like that of Johanna. The coast appeared very rocky, and being open to the S. E. a large swell came in, and there was a great surf on the shore, which he supposes would make it very troublesome watering there.

" 1st June, the islanders complain of our people taking their cocoa-nuts, and other fruit from the trees, without paying for it, which I have strictly forbid.

" 2d, filled the remainder of our casks, and took on board some cowries, and 20 head of cattle.

" 3d, took on board our stock of paddy, plantain-trees, pumpkins, and as much fruit as we could stow.

" At 2, P. M. hove up the small bower anchor, took on board 7 bullocks, and prepared for sailing, &c.

" Notwithstanding the plenty with which this island seems to abound, we could not get any more than 27 bullocks to bring away with us, and many of them very small."

MAYOTTA, the southernmost of the Comoro Islands, is less frequented and less known than the others, being entirely surrounded with dangerous reefs. At its north-west end there is a Saddle Island, like that off the north-west point of Johanna,

which has probably been the occasion that several East-India ships erring in their latitude, have mistaken Mayotta for Johanna. The town and anchorage lie about 5 miles S. E. by E. from that island. This anchorage is remarkable by a bluff head, with rocks overhanging the sea, and mistaken for a ship at anchor close in shore. It flows there upon change days, E. by N.; the water rises 11 feet.

JOHANNA, which they call also *Anjoan*; is of a triangular form: between its two north points are the bay and anchorage, and the south point lies about 12 leagues N. W. from Mayotta. This island is the most frequented by European ships, and when you are bound to it you must fall in with the south point, off which there is a reef which will be perceived as you come near it. This reef runs along the west coast to the north-west point of the island, where it joins with a small island, called from its appearance, *Saddle Island*; you may steer for that island, and round it at about $\frac{1}{2}$ a mile distance, in 10 or 11 fathoms. The water appears as if a shoal, but there is nothing to fear if you keep in that depth.

When you have the bay open by Saddle Island, you must keep your luff as much as possible (there being no danger but what you see) lest the flaws, that come off the island very strong, set you out, being variable, and no anchoring, unless you are near the town, which lies in the very bight of the bay; though the anchoring place is when the peak bears S. by E. $\frac{1}{2}$ E. The Mosque East; the extremes of the bay N. E. easterly to N. W. by W., and the river S. by W.

The anchoring before the town being very bad, it is not advisable to lie there, for your off-anchor lies in 25 fathoms, and your other in 7; and at low water you will not be distant above 2 cables length from the shore; whereas off Brown's Gardens, being moored in 10 fathoms with your inner anchor, you will lie better, and at low water, be a good quarter of a mile from the shore.

Brown's Gardens are a long range of cocoa-nut trees close by the water side, having a large black rock to the eastward betwixt the town and them, and the river where you water being the extreme of them to the westward.

Between Brown's Gardens and the Mosque Town there is a reef of rocks, which are dry at low water, and spit out near a quarter of a mile. It is high water at 4 o'clock $\frac{1}{2}$, on full and change days, the flood setting commonly to the N. W. and the ebb to the East. The tide flows up and down near $2\frac{1}{2}$ fathoms; and as the beach is very level, when it is high water you appear at a great distance off, but at low water, when the large stones shew themselves, you will find yourself close to the shore.

There is another watering place that comes through the first Toddy Tope, to the eastward of the town, for which you bring the Mosque to bear S. E. by S.

At this island you get plenty of good water, but wood is scarce: here is also abundance of provisions, such as beef, goats, fowls, lemons, oranges, cocoa-nuts, &c. at a cheap rate; but

But the air is unwholesome, chiefly during the night, and to avoid its bad effects, you ought not to lay ashore.

The N. E. Monsoon sets in at Johanna and the adjacent islands, between the 10th and 16th of November, and then it is dangerous to lie in the road: in the S. W. Monsoon, you meet with little winds variable and calms, and the current sets generally strong to the S. W.

Among the DANGERS adjacent to the Comoro islands, we have already mentioned the reef lying 4 or 5 leagues to the E. N. E. of Mayotta. Another Shoal discovered by the ship *Firebrass*, in 1682, lies to the East of that island, at about 45 miles, according to *Thornton*; and a Third is placed 24 miles to the south-eastward of Mayotta, by the same Hydrographer.

On the west side of the Comoro islands, there is a *Shoal without breakers* 3 leagues from the south-west point of Comoro. The Portuguese pilot says that it is 5 or 6 leagues long, N. W. and S. E. that at half flood, the south part has 6 fathoms, and the north end 4 fathoms water.

Eight leagues to the westward of Comoro there is a *Reef of breakers* seen by the *Devonshire* in 1764; it appeared to be about 2 miles long, and to run N. E. and S. W.

In the passage between Comoro and the coast of Africa, lies the *St. Lazarus Shoal or Bank* in about $12^{\circ} 10'$ latitude South, and 10 or 12 leagues eastward of Querimba Islands; though it has been sounded on by several English ships, its true situation, nature and extent are uncertain; but the Portuguese describe it as dangerous.

This shoal appears to be the same as that mentioned by Mr. *Osborn*, (first officer of the *Kaunitz*, an imperial ship, in 1791), which bears S. E. $\frac{1}{2}$ S. from Cape Delgado, distance about 27 leagues, and 14 leagues to the eastward of the Querimba Islands, in latitude $11^{\circ} 3'$ south, and $42^{\circ} 25'$ East of Greenwich, per celestial observation. "We saw the breakers, continues this officer, from the quarter deck bearing East about 3 leagues, had no soundings, and it blowing fresh could not remain farther; at the same time, the weather being clear, we could see the land to the westward, which I judged to be about 11 leagues distant."

PASSAGE FROM THE COMORO ISLANDS,
TO THE LACCADIVE OR LAKE-DIVAS;
AND THE NINE DEGREE, AND TEN DEGREE
CHANNELS.

ISLANDS AND SHOALS IN THE PASSAGE.

WHEN you sail from Johanna for India you may steer N. N. E. as far as the 8th parallel of south latitude, and provided you do not make a greater casting there is no danger. Besides, as the latitude of the Aldabra islands is known, you may be upon your guard in the supposition of an error eastward, which is the least to be apprehended, as it has been experienced that the currents about these islands were setting to the S. W. As you run to the northward you will meet with fresh and steady gales at S. S. W. and S. W. and the more you decrease your latitude, the more westerly will you find them, and the fresher do they blow.

From the 8th parallel of south latitude you steer N. E. $\frac{1}{2}$ E. so as to cross the Line at about 54 degrees longitude East from London, or near 3° to the eastward of the shoal of Amber. Hereabouts you will find a southerly current, from 10 to 15 miles in 24 hours: you may continue your course N. E. or N. E. by E. till the latitude of $30^{\circ} 30'$ north, and about 58° east longitude from London, when you are clear of all danger, and may steer as you please. But when the S. W. monsoon begins to abate, ships should shape their course more easterly, as they will have very strong westerly currents, and might fall in with the coast of Africa.

Having got thus far, if they are bound to Bombay they will haul to the northward, in order to get into the latitude of their port, and then run down upon it with an easterly course.

Let them keep the parallel of $18^{\circ} 50'$ north, till they have soundings, which they will find 28 or 30 leagues off the coast, at 80 or 90 fathoms, and by them they may run in for the land. If the weather be clear, the land about Bombay may be seen in 40 fathoms water; and then its distance is about 10 or 11 leagues. From 55 fathoms, brown sand, you will run 22 or 20 leagues before you shoalen the water to 36 fathoms, muddy ground: in 36 fathoms you will be 8 or 9 leagues off the coast; in 26 fathoms 6 or 7 leagues; and in 17 or 18 fathoms from 4 to 5 leagues.

Ships bound to the Coasts of Malabar and Coromandel, from the Inner Passage, after having crossed the Line, direct their course for the LACCADIVE ISLANDS, through which there are several channels.

These

These islands, almost all inhabited, are low, and sandy, covered with cocoa-nut trees, and not to be seen above 5 or 6 leagues from the mast-head, in clear weather; the sea overflows some of them, and they are all surrounded with breakers.

The common channels for ships are called the Eight-degrees, and the Ten-degrees Channels.

Between the islands Seuhelipar and Mallique, is the TEN-DEGREE CHANNEL, reckoned the safest of the two. The best latitude to sail in is $9^{\circ} 36'$ or $9^{\circ} 40'$ North; you must be careful of keeping your parallel in going through, for though the current in general sets to the south-westward, it happens sometimes that it takes a northerly direction.

If you see either of the Islands, you may take a fresh departure, and direct your course for Cape Comorin; but if you pass through this channel without seeing any of the Islands, which is often the case, as the weather, in the S. W. monsoon is generally very cloudy and hazy, you must continue to steer to the eastward, in the above-mentioned parallel of latitude, till you strike soundings on the Coast of Malabar.

Between the Islands Malique and Kelay, is the EIGHT-DEGREE CHANNEL; the best latitude to go through, is $8^{\circ} 45'$ or $8^{\circ} 50'$ North.

N. B. You will have no soundings nearer any of the Laccadive, than 4 or 5 leagues, neither on the east or west sides, nor in the channels, but at much the same distance.

In latitude $9^{\circ} 40'$ North, which is a little to the southward of Cochín, you will get soundings at 60, 50, or 40 fathoms, 15, 13 or 11 leagues off the coast; and the water shoalens gradually, as you run for the land.

In the above latitude and in clear weather, you can but just see the land from the deck, in 23 fathoms water, which is as near shore as you need; and in the above depths, its distance will be 8, 9, or 10 leagues. You may then steer a S. S. E. course, which will lead you along shore; or take a fresh departure and direct your course for Ceylon.

About 37 or 38 leagues North of Comoro Island lies the little Island of St. MARTIN's, named also *Little Comoro*; it was discovered in 1600, by *Aleixo da Mota*, a Portuguese, and seen 7 years afterwards by Captain *Sharpeigh*, an Englishman; since that time its existence has been questioned by the generality of navigators: the Portuguese pilot mentioning a ship who sailed near it in February 1700, describes it as a small island about $\frac{1}{2}$ a league in breadth, and as much in length, even with the water's edge, and not to be perceived at above 2 leagues distance; it is full of trees, with a sandy beach round it, and very steep as the sea only broke on the shore.

Little Comoro was seen likewise on the 28th of May 1777, by the English ship *Valentine*, as it appears by the only journal remaining of that ship, which was lost in the homeward-bound passage.

Seventy leagues to the north-eastward of Little Comoro the LATHAM'S SHOAL was discovered in 1758, by the ship of that name in $6^{\circ} 57'$ latitude South, 13 leagues from a point

a point of land bearing W. $\frac{1}{2}$ N. supposed to be Zanzibar, but which Mr. Dalrymple is inclined to think was the Island Monfia then in sight.

In $9^{\circ} 38'$ latitude South, and about 68 leagues N. E. by N. nearly, from the road of Johanna, are the two islands of ALBADRA, or *Aldabra*, named *Atques* in the old English Charts. They have been explored in 1743 and 1756, by the French, and seen in 1766 by the *Asia*, who passed between them: above 20 leagues N. E. by N. from these lies ISLE-NATAL in $8^{\circ} 32'$ lat. South.

The BASSAS DE PATRAM were descried from the mast head, in 1758, by Commodore Wilson in the *Pitt*. He found them to lie in $4^{\circ} 50'$ lat. South, and $50'$ mer. dist. East from Comoro; they were breakers with a dry sand, and by the bearings about 3 miles in extent.

The BANK, or BASSAS DE AMBER, under the Equinoxial Line, have been seen by several English ships, especially by the *Pantber*, Captain Affleck, May 17, 1760, sailing from Johanna towards India; her latitude at noon was $0^{\circ} 9'$ mer. dist. $5^{\circ} 49'$ East from Johanna; at 2 P. M. they saw the bank of Amber, bearing E. 5 or 6° S. and 7 or 8 miles distant; they sounded and found no ground at 35 fathoms. At 4 P. M. they made the extremes of the bank, which was dry, and had no ground at 100 fathoms. $12^{\circ} 20'$ West variation had been observed A. M. and $12^{\circ} 21'$ P. M. A mean between the reckonings of several ships, would place this shoal in $51^{\circ} 50'$ longitude East of London.

OF THE WINDS

WHICH PREVAIL IN THE EASTERN SEAS.

IN the whole extent of the Southern part of the Indian Ocean, between the Cape of Good Hope, and New-Holland, to the South of the 28th parallel of latitude, the winds are variable all the year round. Indeed you meet frequently with winds from the West, the N. W. and North quarters, which sometimes veer to N. E. but it may be said in general that the winds are never constant in this part of the eastern seas.

From the 28th parallel of latitude going towards the North, to the East of Madagascar, the winds blow from S. E. to E. during the whole year; they call them *General* or *Trade winds*, as we have said page 63, because they prevail in this manner, not only in the eastern seas, but likewise in all the other southern seas, except that in the latter their tract extends as far as the Line, whereas in the Indian Ocean, this tract seems to be limited between the 28th parallel of latitude in some places, and those of 8 to 9 degrees in others, chiefly to the South of Java, and of the other islands to the East.

This rule in regard to the winds, though pretty constant, is nevertheless subject to some variations when the sun is in the austral part, that is to say, in the months of October, November, December, January, and till the 15th of April; the sun changes there the state of the Atmosphere; you then frequently see N. W. winds prevail, sometimes winds from the West inclining to the South, chiefly towards the changes of the moon. This disposition of the winds is principally known between Madagascar, and the Isles of Bourbon, Mauritius and Diego Rays, or Rodrigue; it serves the ships to sail up from one island to the other, in a much shorter time than during the other months of the year. It is also in this season that storms and hurricanes are often raging in the tract assigned to the general winds.

THE PERIODICAL WINDS OR MONSOONS.

THE SOUTH-WEST MONSOON.

THE CURRENTS.

THEY usually distinguish in the East-Indies Four Monsoons, or Seasons, during which the winds commonly blow six months from one side, and six months from the other.

The S. W. Monsoon prevails to the North of the Equinoxial Line, while the S. E. Monsoon blows from the South of the Line; and when the N. E. Monsoon follows that of the S. W. to the North of the Line, a Monsoon is seen to prevail in the southern part, wherein the winds blow from the N. W. to the West, and in some places to the S. W.

The S. W. Monsoon obtains from the 15th of April till the 15th of October, in the whole extent of the seas comprised between the coasts of Africa, Arabia, and Japan.

The N. E. Monsoon prevails from the 15th of October to the 15th of April, in the same extent, except only on the Red Sea, and in the Gulf of Persia, which have particular winds; we might also add the Straits of Malacca, where the winds are generally shifting, and in which the Monsoons do not blow for a long time; yet while the S. W. and N. E. winds are at the strongest without the straits, a middling gale blows on the same side within the Straits of Malacca, that is from the east quarter in December and January, and from the west quarter in June and July.

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The change of the two Monsoons comes on gradually and never suddenly, variable winds prevailing between the two; but these revolutions are commonly followed with, and sometimes preceded by, storms and hurricanes, chiefly when the N. E. Monsoon replaces that of the S. W., viz. in October and November; those which happen in April are less frequent and less impetuous.

The Monsoons from the S. E. and N. W. which reign to the South of the Equator, are circumscribed within a lesser extent, since they are felt in the southern ocean, only from the Line to the 8th or 9th degree of latitude, and as far as the 12th or 13th towards the Isles of Sunda, Timor, &c. As for their boundary from West to East, it is observed that they blow only from the Meridian, passing near the north-east end of Madagascar, to the Molucca Islands.

The winds during these two Monsoons have in the same time a very different direction: from those which prevail to the North of the Line; for when they come on that side from the S. W. they blow on the opposite side from the S. E. When the N. W. Monsoon, which generally begins in November to the South of the Line, obtains in that quarter, it is then the N. E. wind that is blowing on the north side.

As to their change, it is not accompanied with hurricanes and storms, like those which happen in the north part; and though you have bad weather, and the land and sea breezes are more or less strong, the winds are never violent.

Some authors, who seem to have copied each other, limit the S. W. and N. W. Monsoons to 2 degrees of latitude South; but after many researches, inquiries, and observations on that head, the most experienced navigators have discovered only between the Monsoons to the North and the South of the Line, some alternate variations, little perceptible, and which they do not think sufficient for fixing a boundary.

As to the space of sea situated to the South of the Equator between the Meridian passing near the north-east end of Madagascar, you meet there, from the month of April till that of October, with S. S. W. winds, which, when you are going to the North, incline more to the West to unite with the S. W. winds blowing to the South of the Line.

From the month of October or November till the month of April, you have in the same tract winds from N. N. E. to East, and near the coast they come very often from the E. S. E. to S. E. probably to re-establish the equilibrium of the air rarefied on the land by the great heat of that season.

The Red Sea and the Gulf of Persia, although divided only by Arabia, have different winds: they blow in the Red Sea from the south quarter almost nine months in the year, to wit, from the end of August till the 15th, or even to the end of May, when they vary from North to N. N. W. and commonly continue in this manner till the end of August; but the land and sea breezes prevail sometimes over these winds.

In the Gulf of Persia the N. W. winds blow from the month of October to the month of July, and the S. E. winds during the remaining 3 months: however neither

of

of them are so regular, nor of such duration as those of the Red Sea, being often interrupted by strong S. W. winds, chiefly about Cape Musseldom; and sometimes by land breezes.

The S. W. Monsoon begins to blow on the coast of Africa to the North of the Equator in the first days of March; and towards the end of that month it prevails on the coasts of Arabia, at the entrance of the Red Sea, and as far as Cape Rossalgat. In the beginning of April it is met with on the southern coast of Persia without the Gulf, then at Cape Guadel, on the coasts of Sind, of Guzurat; and as far as St. John's Point towards the 15th of April; but from Bombay, all along the coast down to Cochin, the S. W. Monsoon begins only the latter end of May, or at farthest the 15th of June, and then it is general.

From Cochin to the South as far as Cape Comorin, this Monsoon commences fifteen days sooner than at Bombay. In the Gulf of Manar, as well as along the Coast of Ceylon, it is felt from the 15th of April.

THE CURRENTS in those seas are partly regulated by the impulsion of the winds: near the coasts, on account of the smaller depth of water, their effect is more easily perceived; as to their direction, it depends for the most part on the bearing of the coasts, the headlands they meet with, and the islands which are adjacent to the continents: along the north-east coast of Africa, from the Equinoxial Line to Cape Guardafuy, thence on the coast of Arabia, towards Rossalgat, and on the south coast of Persia, the Currents begin to run from the S. W. in March or in April, and continue in that direction till September or October, when they set from the N. E. to the S. W.

From Diu Point to Bombay, you rarely meet with a regular Current on account of the strong tides, but in August and September the overflowing of the Ind or Indus, and of the Rivers of Cambay, Surat and others, produces in those seas a strong Current which sets towards the South.

From St. John's Point to Cape Comorin there is almost constantly a Current running like the coast from N. N. W. to S. S. E. except that between Cape Comorin and Cochin, you find it from S. E. to N. W. from October to the end of January.

The Current sets from the Ocean into the Red Sea from the month of October till the month of May; and it comes out of that Sea between May and October.

In the Gulf of Persia it sets commonly towards the Ocean during the whole time of its running towards the Red Sea: on the contrary it runs into the Gulf from the month of May to the month of October.

In that part of the Ocean comprised between the African coast and the Laccadives, it has been supposed that at all seasons of the year, the Currents did set towards the West; and this opinion was grounded, on the differences found in the reckonings of ships, which make the Coast of Malabar, sailing from the Mozambique Channel, or from Mauritius. But as it is known in this passage that the Currents to the South of

the Equator run pretty swift to the West, the difference is not to be ascribed to the motion of the seas in the northern part. Besides, in examining the journals, differences have been found in a contrary way: however, during the S. W. Monsoon, when you approach the Laccadives, the Currents set to the S. W. as we have observed already; among these Islands their direction is S. S. W. and between them and the Malabar Coast S. S. E.

In the Gulf of Manar, between Ceylon and Cape Comorin, from the Month of May to that of October, the Current runs to the northward; during the remaining six months, that is from October to May, its direction is S. W. and S. S. W. From Berberyn Island along the south coast of Ceylon in the S. W. monsoon, the Current sets to the eastward; but during all this time there is no regular Current on the east coast of the main island, between Aganis and Trincomalay: from the latter place it runs to the northward along the Coast of Coromandel. From the end of September; and even sooner, till the month of February, the Current takes its direction from Point Pedro, towards Point de Galle to the S. E.—S. S. E.—South—S. W. and West, according to the bearing of the coast: at Point de Galle it meets and unites with the Current that comes out of the Gulf of Manar.

Besides those general rules, the Currents round Ceylon are liable to variations and sudden shiftings, for which no reason can be assigned; a ship has been forced to anchor near Berberyn Island by a calm, and by a current which was running strait to the land, but those tides or currents are neither frequent or lasting; the ordinary Current along the south coast is not above a league *per* hour, and in the Gulf of Manar, as well as on the north-east coast, it is always very weak in June and in November.

THE NORTH-EAST MONSOON.

IT is natural to imagine that the N. E. Monsoon, which follows that from the S. W. prevails in all the places where the latter has been felt, and this rule is found true in all India, as well as on the whole extent of the Ocean comprised between the African and Arabian shores, till within a certain distance of the coast of Indostan; but an exception must be made for the south coast of Persia, and for those of Guzurat and Malabar, where the winds are never steady. Between the end of October and the 15th of November, the land and sea breezes beginning in those parts, will last four months, and sometimes more; they are very serviceable to ships who sail along up or down the coast, and we shall describe them more particularly in the sequel of this work.

When the land and sea breezes are towards their end, they are succeeded by winds from the N. N. W. to the W. N. W. which blow till the return of the Monsoon, and then

then you have very few regular breezes. Those winds from the north-west quarter blow sometimes very strong, chiefly from the end of February till the 15th of April, and they occasion such a swell for a fortnight together, that it is very difficult to sail northward; nor can you make any progress that way, without continually availing yourself along the shore of the small breezes which are blowing there.

As to the ships that are sailing westward between the 15th of November, and the 15th of January, they have a very quick passage from the Coast, where the breezes prevail, to the tract of the N. E. winds blowing in the offing; but when later they must be at a great distance from the land to meet with those winds.

THE MONSOONS ON THE COAST OF COROMANDEL, AND OTHER PLACES OF THE BAY OF BENGAL.

THE SOUTH-WEST OR WEST MONSOON.

THE CURRENTS.

DURING the month of March, on the Coast of Coromandel, the weather is generally mild, with a clear sky, and without storms; and if any should happen they are soon over; after midnight a gentle breeze blows from the N. W. shifting to the S. W. and sometimes calms; but when it blows fresh the wind lasts without interruption till 9 or 10 o'clock in the morning. In the afternoon, and seldom before, the S. E. breeze begins; it varies to the E. N. E. and sometimes even to N. E. Those small returns happen chiefly when the moon of February anticipates much on the month of March.

In the offing, that is in the Bay, the winds are variable from the S. W. to South, to East, and N. E. the Currents follow these variations, but they are more subject to run northward, the South wind being the most frequent; it is pretty near the same along the coast.

The months of April and May produce the strongest Currents; these are setting to the North and N. E. It is also in these months that you meet with the strongest breezes from the S. S. E. a calm happens in April; only when the moon of March is late, and before some squall, or before the return of the N. E. Monsoon.

On the Coromandel Coast the moon of April is dreaded on account of this return of Monsoon; it is at least accompanied with violent winds, and rains which last 3 or 4 days; in this uncertainty it will be prudent to avoid all danger, to pass this Lunation 2 or 3 leagues off the shore in 15 and 16 fathoms water. This caution concerns especially the coast.

coast we are speaking of, for in the bottom of the Bay, the squalls and storms are much more frequent during this month.

The regular breezes before mentioned which come from the S. S. E. begin commonly between 9 and 10 in the morning, lasting till 9 or 10 in the evening, and sometimes all night. In the morning the winds come from the S. S. W. and S. W. and when they blow fresh the S. S. E. breeze is strong.

In some years towards the end of April, you have westerly winds for 2 or 3 days; generally the sky is pretty clear, except in the evening, that it is sometimes clouded in the west quarter, and then accompanied with lightnings; when the day breeze happens to be strong the Horizon is a little hazy towards the East.

In the month of May the weather is pretty near alike; you have commonly in the morning land breezes, from S. W. sometimes pretty brisk; when they are strong they hold on much longer than April: on this account the winds from S. S. E. to South, by which the land-breezes are produced, begin only in the afternoon, to finish about 9 or 10 o'clock in the evening, as we have said just now, and are consequently of less duration. This happens chiefly towards the end of this month, when you have sometimes for 3 days steady winds from the West and S. W. which are strong in the middle of the day, and moderate in the morning and evening.

Between the regular land and sea breezes the calm prevails generally: the breeze becomes strong when there is no calm, and that the S. W. winds chop about from the South to the S. S. E. and S. E.

There are some years, when in the course of this month strong gales, or dry squalls, will happen that last one hour or two; they come from the N. W. and seldom from the east quarter; sometimes they are accompanied with rain and thunder, and then there is little wind.

In the bottom of the Bay of Bengal the months of April and March are very dangerous, for besides violent storms which sometimes rage there, few years will be found where you are not exposed to hard gales from the North, and impetuous squalls which last 5 or 6 hours, and even longer, coming on every third day.

During those two months the winds that prevail in the offing are from the S. S. W. to the S. W. and in May to the W. S. W.

The months of June, July, and August, differ little from each other, the N. W. Monsoon is then in its greatest strength off the coast, the winds are constant from S. W. to West, principally in June and July; but towards the end of the latter month, and in August, they blow often from the W. N. W. even to N. W.

On the Coast of Coromandel the land-winds are not so steady, and you have frequently South and S. E. breezes from the offing.

The West and S. W. winds during those three months are excessively hot, and in some years, to an intolerable degree; they blow now and then with so much violence

that

that the air is darkened by the quantity of sand and dust which they raise from the ground; and these dust-clouds are often carried very far into the sea: this is to be seen in the driest years towards the end of June, and in the month of July; but it does not happen when, the tempests being more frequent, the ground has been moistened with the rains, which is generally the case in the month of August.

As long as the West winds are in their force, the sea is smooth along the coast, chiefly at Pondicherry; then the Chelingas or country boats can easily go over the bar, which at any other time breaks very much, and whose passage is attended with difficulty.

While during this season you have pretty fine weather on the Coromandel Coast, heavy rains fall in the bottom of the Bay of Bengal; at Balasore, Chittigong, Aracan, and Ava; on the whole coast of Pegu, at Siam, and other places to the East.

The S. W. winds at this season blowing strong, in the Road of Balasore, are very troublesome, and hinder the Ganges pilots to come on board the vessels; you ought therefore to have good cables and anchors to secure yourself against those winds.

The month of September, though uncertain, is nevertheless more subject to the West wind than to any other; it veers from the S. W. to the North. The land-breezes come sometimes from the N. E. but more frequently from the S. E. and S. S. E. In general this wind is very moderate, except a few storms.

In the bottom of the Bay of Bengal, this same wind is mild from the middle of August to September, but the rains continue there in abundance.

The Currents which during the whole monsoon have run with the wind towards the N. E. slacken in September. On the coast of Orissa, about 8 days before the Equinox, their direction is towards the South, and they become swift at the end of that month. It is a great help to the ships who at that time are sailing from Bengal to the Coast of Coromandel, or other places.

Almost every year, after the autumnal Equinox, strong East winds blow in the bottom of the Bay, on the coast of Orissa, and Balasore; but in the middle of the Bay winds from the north-west quarter are often prevailing.

THE NORTH-EAST or EAST MONSOON.

THE month of October is the most uncertain of the year on the Coast of Coromandel; the winds then are very variable, sometimes frequent calms, sometimes rains and fair weather. The N. E. Monsoon begins only towards the end of the month, and yet it is not certain. By several returns of the S. W. Monsoon the winds become variable until the S. E. pretty fresh, to the N. W. weak, and generally calm, sometimes in the morning

morning a fresh East wind prevails; and at certain times during 3 or 4 days, the wind blows in the morning from the N. N. W. and in the afternoon from the N. E.

A variety of bad weather, of rains and dark clouds that fly round the Horizon, seems to foretel violent storms, which however do not happen often. Therefore all the ships moored in the roads depart about the 20th of this month, either to go a wintering on the east side of the Bay, or to some other place.

In Bengal the rains are generally over from the 10th to the 20th, but the overflowing of the Ganges continues till the end of this month, which is there more subject to storms and hurricanes than on the Coast of Coromandel, though for the most part it blows hard from the N. E. to East; for this season ships bound from the Coromandel coast to Bengal, who sail towards the end of September, ought to keep a good offing in order to weather those storms, or else they would risk to be driven ashore on the coast of Orissa. In the month of November, though it is far advanced in the N. E. Monsoon, you have a variety of winds which are mostly N. E. and N. N. E. generally in the morning from N. N. W. and N. W. and in the afternoon from N. N. E. and N. E. but sometimes S. E. and S. W. winds will blow for 3 or 4 days together. The first part of this month is also subject to calms which last several days, and are commonly followed with storms, more frequently now than at any other time of the year, and so violent that no ship can ride at anchor. They begin from the N. W. and chop round from N. to N. E.—E. N. E. and East. The sea is then so high that you see it foam a league off. As soon as these winds shift to South, they directly moderate, and the sky becomes clear; but if after having blown violently from N. E. a calm ensues, presently it blows as hard as before from the S. W.

Out of the Bay the winds in November are from N. N. E. to E. N. E.

The Monsoon during these two months is regular in the offing from N. N. E. to E. N. E. on the coast it generally blows in the morning, from N. W. and N. N. W. and at noon from N. N. E. to E. N. E. The rains are pretty frequent when the wind varies only from N. N. W. to North, sometimes it rains also with a N. E. wind; then it blows hard for 2 or 3 days, and the surf becomes such that no boat can go over. In spite of this bad weather a ship may remain in the road, if she is sure of her anchors and ground tackle.

In some years these winds blow pretty near at the full and change of the moons of December and January*, they have blown even in the middle of February, when the moon of January happens to be late; but in general they are always less strong in

* Although we indicate here, as well as in the course of this work, the quarters, or the full and change of the moon, in speaking of the shifting of the winds, it is not to be inferred that we believe the winds immediately depend upon those phases, all other circumstances being excluded. This expression is employed only to conform ourselves to the use adopted universally by seamen: we are not ignorant, besides, that the observations on that subject are too deficient, either in quantity or precision, to decide the question.

January and February than in December; it has been remarked in a given number of years that fair weather has prevailed during these months; in the two former months you have a clear sky without rain, and a moderate breeze, chiefly when the weather has been bad in November or in the first part of December; as to the Currents they are found to be according to the direction and strength of the wind.

The month of February is a continuation of the N. E. Monsoon; when this Monsoon is weak it is repelled, especially after the 15th, by the south winds, whose blowing begins sooner or later every year; ships who sail for Europe, at this time, have often met with these South winds, and have been driven by the Currents according to their direction; but they easily got the better of them with the first North or East wind, chiefly if they were in the offing, where the Monsoon loses always less of its strength. It is advantageous then to keep in the offing, to avoid the South winds, which are there less frequent than near the shore.

The North wind holds on in some years till March, but seldom without a revolution from the South. On the Coast the N. W. winds, and the S. E. breezes prevail also in the morning; but the afternoon is always mild, let the wind be what it will.

THE MONSOONS, AND SHIFTINGS OF THE CURRENTS IN THE BAY OF BENGAL.

By a BENGAL PILOT.

“**A**PRIL and October are generally stiled the shifting months, which so far holds good that it has been observed some years, the S. W. Monsoon broke up the latter end of September, and other years not till the beginning of November, so that the month of October is really the mean between the two extremes: the bad weather about this time follows the full moon, and generally betwixt the fall and last quarter, more violent down the Bay and along the coasts of Orissa and Coromandel than to the eastward; which has often been experienced by such as have sailed the October passage, from the Coast to the Bay.

“The North East or **LITTLE MONSOON**, as it is called by the natives, shifts generally in April, all or most part of the Bay, but there are light southerly winds which commence in shore, all along the Coasts of Coromandel and Orissa, in January; and as the Current shifts in shore, to the northward, about the same time, ships may sail from any part of the Coast of Coromandel to the northward, with pleasure, provided they keep not too great an offing. In February the southerly, or south-westerly winds increase in strength, and spread farther off; in March still farther, and near half the

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Bay

Bay over; whilst in the open Bay, a degree or two eastward of the Meridian of Point Palmiras, the N. E. winds predominate, as also the South and S. W. currents. The natural consequence of the opposite winds and currents is a space or column of calms betwixt them, which ought to be avoided by all means, by keeping a proper easting; more especially by those who happen to be dispatched late from Bengal, and bound round the Cape of Good Hope. The Currents along the Coast, as before observed, begin to shift to the northward, in January, and are at the strongest in April; they flag in June, then turn again to the southward in July, and are at their full strength in September or October: on the other side of the Bay, all along the coast of Aracan, observe *vice versa*.

"Bad weather down the Bay in June: the full moon near, or about the time the sun's entering the Cancer, I have known productive of much mischief, particularly in the year 1739, when four ships foundered with their pilots on board, and all their crews perished; myself through God's providence escaped sharing the same fate aboard another ship. And though every year is not always the same in violence, yet I never knew it miss in some degree or other. Therefore I hold it necessary, being bound to the Bay, to guard against the full moon in time, that is if you cannot get a pilot on board two or three days before the full, to delay your time upon the coast, or at sea, till the last quarter; these storms always blow against the Monsoons and give sufficient warning of their approach."

THE SOUTH WEST MONSOON,

IN THE GULF OF SIAM, AND IN THE CHINA SEAS.

IN the Gulf of Siam, on the Coasts of Camboja and Cochinchina, those of the Gulf of Tonkin and China, the S. W. Monsoon commences between the first days and the end of April, which must be understood of the coasts only; for in the offing it begins a month later: it is for this reason that on the north part of Borneo, at Palawan and Luconia Islands, this Monsoon is observed to prevail only from the 1st to the 15th or 20th of May.

As the S. W. Monsoon continues only during six months and begins near the coasts, it is also near the coasts it ceases first, and that the succeeding N. E. Monsoon is to be felt; it extends afterwards like the other, and becomes general on all the seas which are subject to those periodical winds; we are to except only, from this rule, the coasts of Persia, Sind, and Guzurat, already mentioned, with the Coast of Malabar, where this latter Monsoon is never very constant; thus to know when a particular Monsoon is to commence at any place, you are only to consider when the opposite Monsoon has begun, and six months after you may depend on the return of the other.

THE MONSOONS AND CURRENTS,

TO THE SOUTH OF THE EQUATOR.

AS we have shewn heretofore the limits of the Monsoons to the South of the Equinoxial Line, what remains to do to terminate this article of the winds, is to give the particular description of their effect in the Isles of Sunda, and the Moluccas.

The S. E. Monsoon begins in those parts in the month of April, and lasts till November, when the N. W. winds become predominant; but this change from one to the other being not suddenly effected, those two months are commonly subject to variable winds.

In the whole extent of the Isles of Sunda, as far as Timor and Solor, the N. W. winds which begin in November, bring on the bad weather; in December they blow stronger, being accompanied with rain, and in January their strength is at the highest; they produce at this time rains, squalls, and storms, which continue till the middle of February; then becoming gradually weaker they cease entirely at the end of March: we must observe that the abundance or duration of the rains, as well as the violence of the storms, are not equal every year; in some seasons both are more moderate than might be expected.

In the month of April the variety of the winds renders the weather mild, and the sea is agitated only by some short tempests. In May the winds become steady in the east quarter; in June and July they blow stronger, but without any bad weather, and with a clear and serene sky that will last till the end of September. In the month of October the S. E. Monsoon decreases, and the winds become variable till the return of the N. W. Monsoon.

The waters during each season take their course according to the winds, except in the months of April and November, when often they run the contrary way; their velocity is accelerated where the winds are at the strongest, and even at the change and full of the moon.

The currents of the N. W. Monsoon are much stronger than those of the East Monsoon; therefore the ships who sail from Batavia to the islands of Timor and Solor, or to the Moluccas in the adverse season, find less difficulty than those which are returning from the same places during the N. W. Monsoon. By the same reason the ships that go from Europe to Batavia, to the Gulf of Siam, to China, &c. pass the straits of Sunda with more facility in May, June, July, and August, than those which come out of the straits on their return, in December, January, and February.

The winds in the S. E. Monsoon blow generally from S. S. E. to East; they vary from N. N. W. to W. during the N. W. Monsoon.

Near the Equinoctial Line the winds are much more variable, which may proceed from two causes; the first is, that to the North of the Line the Monsoons are different; the second may arise from the frequent rains, chiefly at Borneo, where it rains incessantly during eleven months of the year.

In the Molucca Islands the Monsoons are the same as in the Island of Java and the adjacent islands, with this single difference, that at the Moluccas they give the name of *North Monsoon* to that which we call the N. W. and the name of *South Monsoon* to the S. E. Monsoon, because during the former, the wind is oftener N. N. W. than N. W. and that during the latter it blows more frequently from the S. S. E. than from the S. E.

The North Monsoon occasions in the Moluccas abundant rains, and the South Monsoon produces a great drought. It is the same at Java, and in the other neighbouring islands; but at Batavia you can scarcely distinguish the fair from the bad weather.

THE LAND AND SEA BREEZES.

IN all India in general, as well on the north as on the south side, also on the coasts of Africa and Arabia; on the south coast of Persia, and almost as far as Guzarat; when the N. E. Monsoon, and that of the N. W. are towards their ending, the Land and Sea Breezes begin near the coasts, and continue till the contrary Monsoon, which comes there in succession, has acquired strength enough to blow constantly. This obtains equally on the coasts of the Gulf of Siam, of Camboja, Cochinchina, Tonkin, and China: And on the south side, the same happens on the west coasts of Sumatra and Java, in the straits of Banca, and in all the islands which extend towards the East.

In the same manner when the S. W. and S. E. Monsoons grow weaker in October, or later, according to the situation of the place, you have the Land and Sea breezes, which hold on during 4 or 6 hours; but those breezes are not so strong as in the contrary season, except on the Malabar coast, of which we have already treated.

On the western coast of Sumatra, and on both sides of Java, in March and April, the Land Wind begins commonly in the afternoon, by a squall, sometimes very hard, accompanied with rain and thunder; this storm is followed by a moderate Land Breeze, which continues till it is replaced by the one that comes from the offing. In April and May the Sea Breeze begins sometimes on the coast of Java with a violent squall of short duration, which happens seldom on the other coasts.

DESCRIPTION

DESCRIPTION OF THE *ARCHIPELAGO*
OF ISLANDS AND DANGERS WHICH EXTEND
TO THE NORTH AND NORTH EAST OF *MADAGASCAR*.

Extracted chiefly from M. D'APRÈS.

ADAMIRAL BOSCAWEN in 1748, with a fleet of 26 sails, went from Mauritius to India north-eastward, through this part of the Ocean, without meeting with any island or danger: he confirmed the opinion of those who preferred that passage to the usual track by the North of Madagascar, which requires a circuit of 300 leagues more than the former; since that time the French have explored the Archipelago we are going to describe, which is now much frequented by their ships, and the passage is called by them BOSCAWEN'S PASSAGE. The celebrated author of the *Neptune Oriental*, to whom our work is so much indebted, has wrote a narrative of the explorations made there at different intervals, from which the present account is taken; but confining ourselves to an enumeration of the several islands and shoals, with their respective situations, we will abridge, as much as we can, the historical detail which accompanies his description.

We shall begin with *Sandy Island* or L'ISLE DE SABLE. This Island, situated to the North of Île Bourbon in 15° 52' lat. South, and 55° east longitude from London, was discovered by the ship *La Diane* in 1722: it is nothing more than a flat sandy spot 15 feet above the water, nearly $\frac{1}{4}$ of a mile long from N. N. W. to S. S. E. and about 2 furlongs in width; with a sand-bank running off $\frac{1}{4}$ of a mile towards the S. S. E. The Flute *l'Utile* was cast away there in 1761; and the crew having made a flat bottom boat out of the wreck, escaped to Madagascar*.

* This ship had 80 Blacks, men and women, on board: the Whites who composed the greatest part of the crew, did arrive at Madagascar, after a short passage, and the Blacks were left on the island, with promise of a speedy relief: they all died, except seven women, who remained there 15 years, living upon the shell-fish they could pick, with now and then a turtle, and having nothing but brackish water to drink. Captain *Tromelin*, of the ship *La Diligente*, had the courage and good luck to land on this dangerous spot, and brought them back to Mauritius in 1776. *Abbi Racbon's Voyage*.

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The *Corgados Garajos*, or *Garajos Island*, in $60^{\circ} 2'$ long. East, was explored in 1742, by two French vessels who anchored there on the south side, the 27th of August; the plan they took represents it like a horse-shoe stretching 6 leagues N. E. and S. W. In 1769 the Chevalier *Grenier* explored the bank, which extends about 70 leagues to the N. E. by N. of this Island, with soundings from 25, 30, to 40 fathoms; this is called the *CORGADOS OR GARAJOS BANK*, and it appears certain that the *Banks of Nazareth* laid down in the ancient Charts, and which have never yet been found, are the *Corgados Bank*.

THE SHOALS OF ST. BRANDON, according to M. *D'Après*, are the same as *Corgados Island*, but it is an error of that learned Hydrographer, which has been censured with great acrimony by *L'Abbé Racion*. From the plan given by the Chevalier *Grenier* of the islots that extend on the north-north-east side of *Corgados Island*, these must be the true shoals of St. Brandon, among which Captain *Edward Leger* of the *Falcon* anchored. *Thornton* in his draught places them in $16^{\circ} 38'$ lat. and $9^{\circ} 30'$ longitude West from *Surat*, which removes the shoals 60 leagues to the East of *Corgados Island*.

THE GALEGA is composed of two small islands in $10^{\circ} 27'$ or $30'$ lat. South, and in about $56^{\circ} 50'$ east longitude. Mr. *Dalrymple*, from very ingenious deductions*, thinks there is great reason to believe this is the island which *Davis* in 1601, called *Roquipiz*; it was seen in 1758, and 1768, by two French navigators.

The Bank of *SAYA DE MALHA* is thus described in the English pilot: "The northernmost part of this Bank lies in $9^{\circ} 55'$ south lat. and $11^{\circ} 40'$ West of the Meridian of Bombay; it is steep to. I fell in with the westernmost part of the north point, and had 15 fathoms water, coral rocks, and the next east 8 fathoms, upon which I bore away N. by W. and though but a small breeze, yet deepened every cast, as 12, 15, 22, 25, 32, 60, and 85 fathoms, and then no ground. I came upon it again in 15 fathoms, coral rocks, as before; the next cast had 12, then 10, and fearing shoaler water, tacked and stood off N. N. E. and had 11, 12, 13, 14, 17, and 22 fathoms; and having run about $1\frac{1}{2}$ mile, lost sounding; in the south part of these dangers there are several banks which in some places are said to be dry."

The edition of the *English Pilot*, commonly called the *Waggoner*, by *Samuel Thornton*, in 1716, marks only 2 fathoms on the southern part, and represents the north part to be dry. "No journal I have seen," says Mr. *Dalrymple*, p. 18 of his memoir, "mentions to have had shoal water on the Malha; however if a ship should be carried by currents into soundings, I think it would be most prudent to stand to the eastward, if the wind admits; but a ship ought to be attentive in time to prevent falling in with that bank, at least till perfectly known."

SOUTH ROQUEPIZ, to the East of the Malha, is an island whose existence seems very doubtful; nothing is found concerning it but the Journal of *Lancaster*, who saw it in

* Memoir of a Chart of the Indian Ocean, page 19.

1602*, praises its prospect, and mentions nothing of the longitude; it is said only that this navigator, having left the Bay of Anton-gil the 6th of March, came in sight of Roquepiz the 16th of the same month in $10^{\circ} 30'$ lat. South; this latitude has been adopted by Monf. D'Après, who places it in $64^{\circ} 25'$ east long. from London. We have seen just now that, according to Mr. Dalrymple, this island must be the same as Galega.

To the West of Galega, in an extent of above 7 degrees, there are several islands, the situations of which appear very uncertain, according to M. D'Après. About $3^{\circ} 45'$ West of the former island, or above 5° , according to Mr. Dalrymple, are those called *Nove* or *JOHN DE NOVA* islands, which seem to be joined together by several islots: they form between them a large bay whose opening lies on the east, as well as on the west side. The northernmost island is a flat marshy ground covered with small trees, and full of game and of tortoises. To the N. W. of these islands about 10 leagues, are the *Twelve islands* very little known; and in pretty near the same direction, 10 leagues farther, lies a reef with two small sandy islands in $9^{\circ} 36'$ lat. which is called *St. Laurence*; then at 5 or 6 leagues distance, you find the small island of *St. Pierre*, whose lat. is $9^{\circ} 22'$ South. This is a flat of lime-stones, and white coral, about 3 leagues round, and which may be seen 5 or 6 leagues off; the ground is only rotten wood and leaves, and the tallest trees are scarce 10 feet high; there are there many sea-birds, and large crabs. It is steep to, and you have $20\frac{1}{2}$ fathoms a cable's length from the shore. Mr. Morphey, who was sent in 1756, by Mr. Magon, Governor of the Isle of France, to explore these parts, gave it the name of *Isle du Cerf*, though it is very probable this is the Island of St. Pierre, which has been seen by several French ships going to India. M. D'Après, who makes this remark, has placed it in $51^{\circ} 55'$ East of London, according to the track of those who have met with it in coming from Madagascar. Leaving this island M. Morphey continued his voyage towards the West, and three days after, that is the 13th of August, he descried several islots on a great reef, near which he came very soon, by the effect of a strong westerly current, and which appear to be

THE ISLANDS OF COSMOLEDO; these lie about 55 leagues to the north-westward of Cape Ambro, the northernmost point of Madagascar; they are lime-stone flats, covered with shrubs, the reef being a kind of half circle, whose diameter is above 8 leagues, and green water within. Ten leagues to the N. N. W. of the north-west end of the reef, a low sandy island with trees on it, is said to have been discovered by the English Snow, *Drake*.

In $9^{\circ} 47'$ lat. South, about 18 leagues westward of Cosmoledo Island, is ASSUMPTION ISLAND, explored in that voyage on the 15th of August by Mr. Morphey. It is of a

* Captain John Davis was Chief pilot, and Captain James Lancaster, who had already been to India, as well as Davis, was General of the Fleet sent from London to the East Indies. THIS VOYAGE BEGUN THE 13th FEBRUARY 1600, WAS THE FIRST MADE ON ACCOUNT OF THE EAST INDIA COMPANY.

triangular form, steep to, and made of lime-stones like the others, but full of holes, with a few sandy downs covered with shrubs. On the 18th following the same navigator discovered another island, or rather two islands, almost joined together on the west side by islots; he approached them very near, and found their latitude to be between $9^{\circ} 24'$ and $9^{\circ} 35'$; their longitude has been determined, or rather conjectured by M. D'Après at $46^{\circ} 55'$ East of London, and according to him they are the *Isles Aldabra*, which have been already mentioned in page 112.

Fifteen leagues to the northward of John de Nova Islands described here above, you meet with a reef where the French frigate *L'Heureuse* was lost; that ship having sailed from the Isle de France on the 30th of August 1769, for Bengal, made the Isles of John de Nova September the 5th, 5 or 6 leagues to the West of her, and the following night she struck and went to pieces, on the south part of the reef. The crew escaped upon a dry land a league within, from which they came to a small island joined with the reef and about 7 leagues northward, to which they gave the name of PROVIDENCE ISLAND. It is only 3 miles long and about a third of a mile broad, in the middle; the ground is sand and coral, or white madreporas: the reef with which it is surrounded, begins at the northern part, then bends towards the South in such a manner that at the south end of the island, it lies half a league from it. This reef extends 6 or 7 leagues southward, and its greatest breadth near the middle of this extent, is pretty near 2 leagues; the whole space within is filled with banks of sand and coral*, several of which are above water; so that at low tide it is scarce passable in a canoe, which without great care would even ground on it at high water.

The

* " It is wonderful to see the *Coral Banks* in all the eastern seas; these Banks are found at all depths, at all distances from shore, entirely unconnected with the land, and detached from each other: although it often happens they are divided by a narrow gut without bottom.

" I have seen these Coral Banks in all the stages; some in deep water, others with a few rocks appearing above the surface; some just formed into islands, without the least appearance of vegetation: others with a few weeds on the highest part, and lastly such as are covered with large timber, with a bottomless sea, at a pistol-shot distance; though I think in general they are filled up in the centre when they have large timber.

" After storms it is frequently obvious, that the force of the waves has thrown up a bed of Coral; this is, perhaps, at all times imperceptibly effected, though only obvious after storms: Coral Banks also grow by a quick increase towards the surface; but the billows heaping up from deeper water, chiefly accelerate the formation of these into shoals, and soon after into islands. The banks become gradually shallower; and when once the sea meets with resistance, the coral is quickly thrown up by the force of the wave breaking against the bank; and hence it is, that in the open sea there is scarce an instance of a Coral Bank with so little water as 3 fathoms, but it is also so shallow, that a boat would ground on it: the loose coral rolled inwards by the billows in large pieces, will first ground, and the reflux being unable to carry them away, they become a bar to coagulate the sand, always found intermixed with coral, which sand being easiest raised will be lodged a-top. When the sand-bank is raised by violent storms, beyond the reach of common waves, it becomes a resting place to vagrant birds, whom the search of prey draws thither. The dung, feathers,

The north part of the island is covered with cocoa-trees, and the South part with a spungy tree which resembles the European fig-tree; this is straight, and about 40 or 50 feet high, with knobs like the bamboes, 6 feet from each other; its fruit is not unlike small mangoes. There is also a creeping wood, of a red colour and very hard, whose affines, when they had been soaked with rain-water, became a stone not to be broke without a hammer, and whose inside appeared glittering like a shell; fresh water is found here in plenty, as well as turtle, and a species of land crabs very large and good to eat; they caught one which weighed six pounds: there is also a great number of rats who nestle on the cocoa-trees. The latitude of the island by four observations was found to be $9^{\circ} 7'$; the variation $11^{\circ} 45'$ West. *N. B.* The whole island is covered by the sea, at high water in the equinoctial tides.

After having remained two months in this island the crew, to the number of 35 men, did embark on the 8th of November in their canoe, which had been lengthened 6 feet; and with the help of the N. E. winds, they landed 4 days after on Madagascar, 8 leagues to the South of Cape Ambro.

Fifty leagues N. E. by N. from Providence lies ALPHONSE ISLAND, so named by the ship *le Lys* who discovered it in 1730; and 15 leagues S. S. W. of this, there is a reef 5 or 6 leagues in extent.

To the North of Alphonse Island, about 15 leagues, begins the Archipelago of the MAHÉ ISLANDS, which were discovered in 1743, by *Lazarus Picault*, and named after the famous *Mabé de la Bourdonnais*, then Governor of Mauritius. The extent of

feathers, &c. increase the soil and prepare it for the reception of accidental roots, branches, and seed, cast up by the waves, or brought thither by the birds. Thus islands are formed; the leaves and rotten branches, intermixing with the sand; form in time a light black mould, of which in general these islands consist, more sandy as less woody, and when full of large trees, with a greater proportion of mould.

"Cocoa-nuts continuing long in the sea, without losing their vegetative powers, are commonly to be found in such islands, particularly as they are adapted to all soils, whether sandy, rich, or rocky.

"The violence of the waves within the Tropics must generally be directed to two points, according to the Monsoons.

"Hence the islands formed from Coral Banks must be long and narrow, and lie nearly in a meridional direction; for even supposing the banks to be round, as they seldom are when large, the sea meeting more resistance in the middle, must heave up the matter in greater quantities there than towards the extremities; and by the same rule the ends will generally be open, or at least lowest; they will also commonly have soundings there, as the remains of the bank not accumulated will be under water.

"Where the Coral Banks are not exposed to the common Monsoon, they will alter their direction, and be either round, extend in the parallel, or be of irregular form, according to accidental circumstances.

"The interior parts of these islands being sea, sometimes form harbours capable of receiving vessels of burthen, and I believe always abound greatly with fish.

"It need not be repeated that the ends of these islands only are the places to expect soundings, and they commonly have a shallow spit running out from each point."

See Historical Collections, &c. by Alexander Dalrymple, Esq. Vol. II. p. 22, et seq.

this Archipelago from N. N. E. to S. S. W. is above 120 leagues, and from East to West above 100 leagues; it contains a great number of reefs and shoals, pretty well known, the westernmost of which seem to be the *Amirantes* of the former navigators. The principal of the islands are towards the North, viz. PRASLIN, SILHOUETTE, and SEYCHELLES, which is largest of all, being about 16 miles long, and near 5 broad. On its north-east end there is a harbour between the main and two islets; the northernmost of these is called *St. Ann*, and in 1768, the Abbé *Rochon* observed its latitude to be $5^{\circ} 50'$ South, and the longitude $55^{\circ} 40'$ East from London. The French were then going to make a settlement in Isle Seychelles*, which has nevertheless continued desolate ever since that year. Round the three great islands and the small ones adjacent to them, lies a Bank of soundings of a triangular form; it extends about 99 leagues from N. W. to S. E. and near 40 in breadth East and West, with a depth of water from 8 to 44 fathoms, and no ground without on the north side, at 120 fathoms.

We shall subjoin here the detail given by Monf. *D'Après* concerning the south part of the Mahé Archipelago.

Eighteen leagues and a half N. by W. from Alphonse, the ship *le Lys*, who had discovered it, descried another small island which was named *St. Francis*; this same island of *St. Francis* was seen in 1744, by a vessel going to the Malabar Coast, who had at less than a mile from its west side, 8 fathoms, coral ground. She saw afterwards a like island to the E. N. E. of this, and found between the two, 35 fathoms water same ground; the same day at noon, having sailed 6 leagues N. E. by W. and being in $5^{\circ} 59'$ south latitude—Obs. She descried a third islet 3 miles to the West, and had always from 30 to 35 fathoms. *St. Francis's Island* was likewise met with in 1756, by the frigate *La Gloire* bound to Patté. M. *Du Rossan*, sent in 1770 from the Isle of France to explore the Mahé Archipelago, found an island which he named *L'ISLE PLATE* (Flat island), whose latitude is $5^{\circ} 45'$ South, and the longitude $55^{\circ} 36'$ East from London; it appeared to be 3 miles round, with a reef in the north part which runs about a mile off.

Steering N. W. from Flat Island, he saw another to the N. W. by W. which he approached, within half a cannon shot, without finding any ground; he sent an officer to

* This island, according to M. *Sonnerat* (*Voyage à la Nouvelle Guinée*), is the only one that we know of, where that species of palm-tree grows, which produces the sea cocoa-nut, called also *Maldiva Nut*, from its being carried by the waves to the Maldivas: this nut is in the highest repute among the Indians, on account of its true or pretended virtues in the scorbutic and venereal diseases: they look also upon the shell as a most powerful antidote. Before the year 1759, when the spot where it grows was discovered, it was not uncommon to see a Maldiva-nut sold in India for 3 or 400 pounds. Abbé *Rochon*, at the end of his voyage, gives a description of the palm-tree which produces that nut, and says it grows only in the *Isle de Palmé*, without telling us which of the Mahé islands is known by that name.

find a proper anchorage, and the following day he went himself to visit the island, which he named L'ISLE DU BERGER (Shepherd's Island); it is higher on the north than on the south side; there is a cut or separation in the middle, which at a distance will make it appear like two islands. This cut is a bank of hard coral covered with some white sand, and entirely under water at high tide, but when the tide is low, it dries so much that you may cross from one part of the island to the other; it is about two leagues in circumference. The ground being very hard coral, with some sand over it, the trees are tall but very spungy; there is also a few cocoa-trees of a small kind, and many birds of various sorts: the insects found there were very small, red ants, flies, spiders, &c.; the sailors said they had seen alligators and blue hens. The whole island is encompassed with a reef that stretches off a quarter of a league, having a channel through which you may enter with a boat, then go upon the islands by means of a natural causeway; the inside of this reef is full of turtle, sharks, and many other fish. The island lies in $5^{\circ} 45'$ lat. South, and $55^{\circ} 13'$ long. East of London.

From this place M. du Rossan, standing to the W. by S. descried a Third island which he called ISLE DE L'ETOILE, (Star Island); it is only a sand bank covered with bushes, and about half a league long; the surrounding reef runs off to the southward about one mile, and the soundings are very uneven between this isle and Shepherd's Island.

At 6 o'clock in the evening a Fourth island was seen which received the name of MARIE LOUISE; it appeared woody surrounded with a reef, and of the same size as Flat Island; its latitude was found to be $6^{\circ} 12'$ South, and the longitude $52^{\circ} 24'$ East.

The 14th of December M. Du Rossan discovered a Fifth island, 2 leagues distant W. S. W. from Marie Louise; he came within a league of it, and had 9 fathoms water, rocky ground: this was also covered with wood, but appeared smaller than all the rest, and was named ISLE DES NEUF (Isle of the Nine); it lies in $6^{\circ} 15'$ lat. South, and $54^{\circ} 37'$ long. East; the depth of water between the two islands is from 25 to 30 fathoms, but towards the offing you suddenly lose ground.

The same day, at noon, they saw a Sixth island, distant about 10 miles W. by N. from Isle des Neuf, and like that island a mere sand-bank covered with bushes; they gave it the name of LA BOUDEUSE.

According to Mons. D'Après these six islands must be those which in the ancient Charts are called the *Amirantes*, although in a latitude less southerly by 2 degrees.

Let us now proceed to the description of the banks and dangers lying to the East, or S. E. of the Mahé Islands.

COETIVY ISLAND, called *Isle St. Francis*, in Vicomte Grenier's Chart, was discovered on the 3d of July 1771, by the Chevalier De Coetivy, who gave it his name. M. D'Après places it in $7^{\circ} 12'$ lat. South, and $56^{\circ} 38'$ longitude East.

BANK ADELAIDE, according to Chevalier *Grenier*, lies 15 leagues N. E. of this, and in $6^{\circ} 9'$ lat. South, $57^{\circ} 5'$ long. East; 6 or 7 leagues N. N. W. of Bank Adelaide you meet with *Success Bank*.

FORTUNE BANK, about 23 leagues to the S. S. E. of Bank Adelaide, is thus described by M. *De Kerguelen*, p. 13 of his voyage. "On leaving Mauritius, the 13th of September, 1771, I made my course corrected North to traverse the Archipelago, which is to the northward of this island; in the night between the 18th and 19th, about 1 A. M. there was a violent squall of rain and wind, with thunder and lightning; at 11 P. M. had no ground, but sounding in the squall, found only 30 fathoms, and next cast only 19, rocky ground. I stood on the other tack under a fore sail, till I had got my anchor ready, and shoalened the water to 17, 15 and 14 fathoms, sand, when, being apprehensive of driving upon some sand-bank, I anchored, and veered out 100 fathoms of cable; the ship brought up and rode fast during the squall, which lasted till 2 A. M. I continued at anchor all night, and we were surrounded at that time with sharks, of which we caught above 50, and with a prodigious quantity of crabs, with which the sea was covered: the multitude of sharks about us made the sea luminous as breakers. At length day came to relieve our uneasiness, but we saw neither land nor rock. On weighing I let the vessel drive, and continued sounding for a long time; I had 14 fathoms, then 20, 25, 28, and then at once no ground. I named this Bank after my vessel *La Fortune*; it lies N. W. and S. E. in $7^{\circ} 16'$ lat. South, and $58^{\circ} 15'$ East from London; its extent, according to *Monf. D'Après*, is 3 leagues.

This Bank had been discovered on the 31st of May 1770, by the *Verelst*, Captain *Compton*: he was on the 30th in $7^{\circ} 24'$ south lat. obs. and $7^{\circ} 44'$ east longitude from St. Mary: he supposes they were upon the bank, but did not sound till about a quarter before 1 P. M. when he had 15 fathoms, coral rocks, then 14 for several casts; being fine clear weather, he could not see the least appearance of shoal or breakers from the mast head; the water was very smooth; steered N. E. $\frac{1}{4}$ E. which was almost close to the wind, going about 4 knots; by a quarter after 1 P. M. had shoaled to 12 fathoms, continued that depth till 2 P. M. then deepened to 14 fathoms for a few casts, and shoaled again to 12 fathoms. From half past 2 till 3 P. M. had 11 fathoms very regular; from 3 to half past 3 P. M. $10\frac{1}{2}$ fathoms very regular; from the last soundings $10\frac{1}{2}$ as fast as could pass the line along; no ground at 20, 50, 100. Though the north-east edge be steep, it is supposed the south-west part shoalens gradually, some people having observed the water discoloured as early as 8 and 10 A. M. the preceding day. They found the north-east end of this shoal in $7^{\circ} 11'$ south lat. and $7^{\circ} 54'$ from St. Mary's, or $58^{\circ} 27'$ East of London.

Immediately after losing soundings, the water came to its proper colour again, with the swell as usual; all the time they were in soundings on the Bank, they had numbers of ground-sharks, which followed the lead ready to devour it.

About 40 leagues to the northward of Fortune Bank, there is another, according to the French, with soundings from 19, and 13 to 31 fathoms, which seem to be the same as the bank which was crossed by the ships *Prince George*, and *Mary*, in 1755.

In $6^{\circ} 0'$ lat. South, and about $60^{\circ} 5'$ long. East, ISLE ROQUEPIZ, or *North Roquepiz*, as it is called by M. D'Après, is supposed to lie; and 30 leagues to the south-westward of this, the little Island of PRINCE GEORGE, both descried in 1755 by the aforesaid ships: a reef runs off 5 or 6 leagues to the S. W. from Roquepiz. The *Portuguese Pilot* describes three flat islets, in an east and west direction, covered with bushes, and which must be placed at the end of this reef; none of them were seen by those ships.

Twenty-three leagues to the N. E. of Roquepiz, from lat. $5^{\circ} 17'$ to lat. $4^{\circ} 35'$ South, THE SWIFT'S BANK lies in an extent of about 20 leagues N. N. E. according to the journal of the ship *Swift* bound from Mauritius to Ceylon in 1744. The soundings upon it are from 24 to 18, 27, 18, 24, and 35 fathoms. Twelve or 15 leagues E. by S. from the south end of Swift's Bank you meet with a ledge of rocks and breakers, seen in 1746, by the *Rose Galley*, Captain *Gentleman*: the *Portuguese Pilot* places the Seven Brothers eastward of this Bank in 4° lat. South.

These Rocks seen by the *Rose Galley* are the farthest to the eastward of any Bank or danger, till you reach the Chagos and adjacent islands. The space between them of above 10° in longitude, being entirely free from islands or shoals, as we may fairly presume from the many ships which have gone the southern passage without encountering any thing above or under water, as well as from those that have formerly passed the same way between Bombay and England. Although the dread of the Chagos, and of imaginary islands and shoals, has brought this tract into disuse in late times, "I am clearly convinced," says a Gentleman*, who joins a great practical knowledge with the most profound theory, "it is preferable in every respect: for Isle Rodrigue, or Diego Raiz, as we call it, being high land, there is no danger of missing it: its longitude being well ascertained, there cannot be a better point of departure; and as this island abounds with wood and water, and plenty of turtle (see pages 74 and 75), there cannot be a more convenient place for refreshment, in the homeward bound voyage, for ships late in the season, who have the prospect of a long and difficult passage round the Cape."

* Mr. Darymple, p. 17, of the Memoir so often quoted and made use of in this Section.

THE CHAGAS ARCHIPELAGO, DIEGO RAYS ISLANDS, &c.

CHAGAS, or CHAGOS, the island from which this Archipelago takes its name, is called DIEGO GARCIA in the ancient Charts, and to this day the Portuguese, as well as the French, give only the name of Chagas to the Banks northward of the island. This double appellation has produced two islands instead of one, and the learned *D'Après* himself places the Chagas Island, seen in the *Pitt* in 1763, above $2^{\circ} 30'$ to the East of Diego Garcia. The observation (of the distance of the Moon to the Sun) made on board the *Pitt*, by Mr. *Stevens*, fixes the longitude of Chagas at $73^{\circ} 25'$ East of London, which agrees within 20 minutes with the longitude found by the recent observation of the Moon made on shore by the French*. The latitude of the middle of the island is about $7^{\circ} 18'$ South.

Chagas, which has the honour of being claimed by the English and the French, has no fresh water, although covered with woods; it is about 13 miles long from North to South, its shape being that of a horse-shoe, bent in the middle from West to East, and whose sand sides are not more than a mile broad. The harbour lies within those sides, being about 4 miles broad, with an island in the middle, where it is narrowest; its entrance is towards the N. W. between three islets which lie from N. E. to S. W. Lieutenant *Archibald Blair*, sent to survey this harbour in 1786, found that of the 4 passages between these islets, 3 of them are fit only for small vessels, but the main channel, which lies between Middle and West Islands, is broad and clear of every danger, but what may be seen from the mast-head; a stranger, says this officer, may enter without risk, in a clear day, keeping only a good look-out.

Coming into harbour during the S. E. winds, it is proper to keep pretty close to the sand, which extends almost a mile westward of Middle Island; by this means a ship will generally fetch into good anchoring ground, without tacking; then your anchor will bear S. $\frac{1}{4}$ E. of West Island; but you must have attention not to stand too far to the westward, to avoid the shoals in the bight.

"This part of the harbour," continues Lieutenant *Blair*, "appears much the safest when the North-westers blow, and is equally secure with any other part in the South-easters: its vicinity to the sea, and the facility with which ships may be brought in or carried out, gives it another grand preference to any other place of this capacious harbour; if necessary, ships may be warped within 500 yards of this shore, which may be looked upon as another advantage.

* *Abbé Rochon*, in the preliminary discourse of his voyage, p. 46, speaking of this island, says, "I have determined its longitude 68° East of Paris," ($70^{\circ} 25'$ East of London) which must be an error of the press.

" We anchored in sand, and our soundings were generally sand; but there is no part of the harbour entirely clear of coral rocks, or rather coral stones, which makes it requisite to have always good ground-service; and no ship ought to come here without having a chain to one of her anchors, as it may be necessary, in particular circumstances, to anchor in rocks which would ruin a cable in a short time; six or seven fathoms of chain bent to the anchor, and the cable to it, would effectually preserve it from damage; this would not much impede the progress of heaving, nor hurt the hawse holes, if a hawser of the same length with the chain, were bent to the anchor, with an eye to the inner end stopped to the cable; when the clinch of the cable is hove up to the hawse, a fore-tackle hooked to the above would bring the anchor high enough for catting."

Examining the western coast of the island, this officer generally stood within half a cable's length from the breakers, and about 3 miles to the S. E. of the west point he sounded again immediately but could get no ground. From a minute inspection he concluded that no vessel can anchor on the outward coast of Diego Garcia, except opposite the harbour, and even there, too close to the shore to justify such a measure, unless in urgent necessity; for though it is there perfectly safe while the wind remains at S. E. instances have been experienced of its veering as far as N. W. during the S. E. Monsoon: the danger certainly exists and ought to be avoided.

" From the experience I have had," pursues the Lieutenant, " and from all the information I have been able to collect, the N. W. currents are constant from the middle of May, when the S. E. winds begin to have force, until November, when their strength abates; the currents then become like the wind, variable and sometimes setting easterly."

" Making this island in the months of July, August, and September, the greatest vigilance is required; as the S. E. winds blow very strong, with hard squalls, much rain and heavy cloudy weather, I would recommend to keep in the parallel of $7^{\circ} 18'$ South to make the island, and to make an allowance for a N. W. current, which probably may set on an average 16 miles per day; and if tolerable observations are made, there will be no fear of missing it, in the most hazy weather; nor do I think there is any danger in running during the day, even in thick weather, as the shore is so bold. Great caution would be necessary in the night particularly, if near the island, to have the vessel under such a sail that she might be hauled by the wind instantly to S. E. on seeing the land, when it would be requisite to ply to windward till the morning, to avoid falling to leeward by the current, and at daylight to stand boldly in, bordering close to East and Middle Islands, and rounding the spit that extends about a mile to the westward of the latter, as close as consistent with safety, to fetch the higher up the harbour. An officer at the mast-head is preferable to any directions that can be given. Working up, care must be taken not to stand farther to the westward than to bring West Island North, to avoid the shoals in the bight; nor too much to eastward, to avoid those extending southward

southward of Middle Island. The west side of the Bay is best for anchoring, unless a ship can fetch so high as to make the east side a weather shore. Next to lunar observations the variation is the best guide for correcting the reckoning in this run: in 1786 the variation was 2° West; it decreases about 1° for 3° of longitude eastward.

About 30 leagues N. W. by W. from Chagos, according to Mr. *Dalrymple's* Chart, are the SIX ISLANDS, called by Vicomte *Grenier* in his larger Chart, *South Isles of Chagos*, and by Mr. *Dalrymple*, *Egmont Islands**. They are all very low, and joined together by shoals which appear fordable; three only abound with cocoa-nut trees; four extend in a direction to W. N. W. the other two tend to N. E.: reefs with breakers, connected with the two extreme islands, form an appearance of a small harbour, on the north-east side of them; Lieutenant *Blair* who examined it, found it difficult of access, and dangerous within from the number and closeness of the shoals. There is no safe anchorage near these islands, the soundings extending so little without the breakers: to S. W. a small coral bank stretches near half a mile off; about 4 leagues South of them lies the PITT BANK, 7 or 8 miles broad, and about 20 from N. N. W. to S. S. E. with soundings from 8 or 10 fathoms water in the middle part, 18 or 20 on the east end, and from 70 to 90 towards the western side.

Sixteen miles northerly, from the six islands, lies an island seen by the French ship *La Boufonne* in 1777, and called by Lieutenant *Blair*, DANGER ISLAND: it is covered with thick wood, and a few cocoa-nut trees near the centre. When abreast of Danger Island, you can see EAGLE ISLANDS, which bear from it N. 25° E. distant 11 miles. The southernmost is an inconsiderable spot, covered with jungle; the other is 2 miles in extent, covered with cocoa-nut trees, and others common to those islands; no soundings except very close to it, on the west side; but to the eastward you have 9 or 10 fathoms, a mile East of the small island.

The THREE BROTHERS bear N. 77° East, distance 13 miles, from Eagle Islands: they are small, two abound with cocoa-nut trees; and they are connected by shoals, and by a fourth island, having small bushes on it, which cannot be seen unless very close in.

About 38 miles north-eastward of the Three Brothers lie the chain of islands called ELIZABETH ISLANDS, after the French ship of that name who explored them in 1744, and named in M. *D'Après's* Chart *Peros Banbos*; this chain is 15 miles in length from South to North, with a channel in the middle of it, through which the *Elizabeth* sailed; from the north point turning to the East, it extends in that direction about 15 miles: all these islands are very small and surrounded with reefs and dry rocks.

Nine or ten miles to the North of these lie the BOURDÉ ISLANDS, which were discovered in 1766, by a French Captain of that name, who took them for the Adu Islands; they are the same as those which have been called by Vicomte *Grenier*, *North Isles of Chagos*,

* These islands were seen by M. *De Surville* in 1756; by the *Egmont* in 1760; M. *Du Rosland* in 1771; and the *Eagle* in 1772.

and by Lieutenant *Blair*, *Peros Banhos*. From the description given by the latter officer, they consist of two chains. The north-west chain, which extends about 7 miles N. by W. and then stretches to N. E. for 3 miles, where there is a channel; it is composed of 7 islands and several dry sands connected by very shoal water, and bears the appearance of becoming an island. The northern chain is formed by 8 islands, and several dry sands and rocks; either side of the seventh island is a navigable channel; in that to the East 10 fathoms is the least water, but within it is full of dangerous shoals.

THE SALOMON ISLANDS, which were discovered by Captain *Bourdé*, mentioned above, are the *Boddam's Islands* of Lieutenant *Blair*; the center of their cluster bears E. 18° S. from the north-east *Bourdé Islands*, distant 17 miles. There are eleven of them; on the southern side they are joined by rocks and sands with breakers.

" November 20th standing round the east side, where they are also joined," says that gentleman, " to N. W. found a channel, and within there was an appearance of a good harbour; hoisted out a boat, and sent her a-head to sound; at 11h. 30m. stood over the bar which lies across the entrance; the least water we had was 3 fathoms; when over, regular soundings, from 10 to 18, coral and some spots of sand; working up passed several shoals, on which there seemed to be but little water: at 1h. 30m. P. M. anchored with the stream in 13 fathoms, sandy clay, near the south-east island, the entrance bearing N. N. W. distant about 2 miles.

" From November 21st to 25th we were employed wooding and watering: the well was dug 5 feet deep, about 30 fathoms from high water mark, and a copse of cocoa-nut trees on the south-east island: the water was perfectly clear, well tasted, and in abundance; we caught 20 turtle, 2 large seals, and fish enough both for present consumption and for salting: but they are not so plenty as at *Diego Garcia*, probably from the number of seals.

" The 25th sent the detachment on shore, hoisted the English flag, and saluted it with three volleys of musquetry, on taking possession of this cluster, by the name of GOVERNOR BODDAM'S ISLANDS.

" If a judgment may be formed of the soil and productions, these may be supposed much older than any we have visited; the soil is tolerable, and much deeper than at *Diego Garcia*, or *Peros Banhos*; consequently the trees take much deeper root, and grow to a greater size: one sort peculiar to these islands, which appears to be very good timber, grows the height of 130 feet; many very straight, some 4 feet diameter, and 40 feet from the ground to the branches: the young timber is white, but the old decayed trees are of a deep chocolate colour, and the timber perfectly sound. The harbour is very secure, but the bar at the entrance, on which there is not more than 4 fathoms at high water spring tides, makes it impossible for large ships to enter. There are a number of shoals within, which may be avoided by keeping a good look-out from the mast-head, as the clearness of the water makes them easily distinguished. I did not see

one rat on any of these islands, a vermin with which the neighbouring ones are much infested; nor do I recollect to have seen insects or reptiles of any kind. Besides the sea-fowl common to the adjacent isles, there is one sort which seems peculiar to this cluster; they burrow in the ground, and make a noise more disagreeable than the jackall: curlews and small plovers are in great abundance; of the latter we shot a great number, which were very good. The productions that might turn to account, are the timber which I have mentioned, cocoa-nuts, and tortoise-shells; of the last but a small quantity could be procured."

To the N. N. E. $\frac{1}{2}$ E. distant 10 or 12 leagues from Salomon's Islands, are the THREE BROTHERS, three small sandy Islands; and in the interval you meet with the Bank of Rocks and Islets seen by the *Griffin* in 1749. About 28 miles North of this lies the SPEAKER'S BANK, seen also in the same year by the *Griffin*, but which takes its name from the ship *Speaker*, Captain *James Dewar*, who surveyed it in 1763.

Its extent from S. by W. to N. by E. is about 20 miles, being near 6 miles broad at its south part, and decreasing to 3 and 2 miles towards the north end; with irregular soundings from 5, 7, 12, 9, 15, 20, and 26 fathoms; the whole eastern side has much shoaler water, the journal of Captain *Robert Scott*, then an officer on board the *Speaker*, gives the following detail of this Bank.

" 11th November 1763, at 6 P. M. saw the rocks under the ship's bottom; wore ship immediately, and had 7 fathoms; kept our wind to southward, and soon deepened to 22, 23, and 24, which we continued for 12 miles on a S. S. W. course, when suddenly shoaled to 9. Tacked and hauled our wind to the eastward; in tacking deepened to 16, and increased gradually to 25, in 2 miles distance shoaled gradually to 8, 7, and 5. Put the ship in stays, but rather shoaling the water, let go the stream anchor, which brought us up in 22, where we rode very easy, a light breeze from S. E. with smooth water. Found the current set West 6 kn. 5f. per hour; at daylight sent the boats to sound.

" Lat. observed at anchor $4^{\circ} 52'$ long. from London, per Sun and Moon, 2 hours before the ship came upon the shoal, and kept on to anchor, $73^{\circ} 2'$ East.

" We plainly perceived the eastern edge to be much shoaler than the rest; I imagine there is much the same water on it, as we passed over not seeing any appearance of breakers any where from mast-head, or any other danger in sight; the bottom, which is mostly coral rock, is clearly seen at 14 or 15 fathoms."

Between Chagas Island, the Speaker's Bank, and the Isles to the westward already described, you have soundings mostly from 12 to 30, 40, and 45 fathoms, with several spots with only 7, 6, 5, 4; ten leagues North of Chagas you will find 80, 120, then 90, and 45 fathoms, as you come nearer the island. This extensive Bank is designed by the name of BASSAS DE CHAGAS.

To the North of the Speaker's Bank, and near the Line, there are some small islands, of which Mr. *Dalrymple* has given the following account.

" The

" The *Southampton*, Captain *Lennox*, 26 December 1782, in the passage from Bombay to Bengal fell in with some Islands in about $0^{\circ} 13'$ North to $0^{\circ} 11'$ north long. $73^{\circ} 22'$ to $73^{\circ} 27'$ East (from Greenwich) by observation of the Sun and Moon, in sight; and a few hours after losing sight of them, he saw two more islands in about $0^{\circ} 21'$ and $0^{\circ} 34'$ South: long. $73^{\circ} 22'$, and $73^{\circ} 14'$ East. They were low islands, covered with trees, supposed cocoa-nut trees; the land not appearing to be above 20 feet high, exclusive of the trees. They passed within 2 leagues of the southernmost island, which had a white beach, and is remarkable by having only two trees on the South-west point. They found a current of 19' southing, and by the Moon's observation on the 28th of December, above 30' easting per day." According to Mr. *Dalrymple* these islands must be the same as those which were seen in 1773, by M. *Ronçais Violette*, commanding the ship *le Bienvenu*. In the passage from Mauritius to Ceylon, being on the 4th of April under the Line, he determined to pass to the South of the Maldivas, by favor of the westerly winds, which still blow there at this season. In holding on that course on the 7th of April he descried the southernmost * Atollon of the Maldivas; the inhabitants came on board. He ranged along the South island, which is low and woody, as are also the others; he observed its latitude $0^{\circ} 36'$ South. After having doubled this Atollon, M. *Violette* stood to the N. E. and made Ceylon the 20th of April; this navigator by his departure from Mauritius reckoned himself in $69^{\circ} 14'$ East from Paris, or $71^{\circ} 39'$ East from London.

Westward of these islots lies a cluster of larger islands, which bear the name of *DIEGO RAIS*, or more properly *DIEGO RUYZ* Islands, and whose position as well as configuration and extent appear very uncertain. The *Albemarle* who saw the eastern part of them in 1707, places the northernmost end in $0^{\circ} 54'$ north; long. $71^{\circ} 50'$ East from London. The *Europe*, Captain *Humphry Bryant*, saw them on the 10th of April of the same year, in her passage from Bombay towards England; the north extreme W. $\frac{1}{4}$ N. 15 miles distant; the south-easternmost part S. W. $\frac{1}{4}$ W. 9 miles; so that, according to this account, the northernmost end will be in $0^{\circ} 51'$ latitude North. The *Europe* made thence to Diego Rais, or Isle Rodrigue, about $10^{\circ} 20'$ West, which added to $63^{\circ} 17'$, the longitude of that island, gives $73^{\circ} 73'$ East of London, for the longitude of the eastern part of Diego Ruyz: this longitude being very nearly the same as that of the islands seen by the *Southampton*, might induce to believe that they were only the western part of Diego Ruyz Islands.

We must not conclude this article without observing, that as it seems to be beyond doubt that the Maldivas extend considerably to the southward of the Line, in the Indian Ocean, it is necessary to give these islands as well as those of Diego Ruyz a good birth.

* It is almost needless to observe that the name of *Atollon*, or *Atoll*, is given to each assemblage of the Maldivas, separated by a larger and deeper Channel than any of those that divide the numerous islands which lie regularly on the edge, and towards the sea, or are scattered within the several clusters.

THE ISLANDS ADU AND CANDU,

LONDON'S BANK, &c.

THESE Islands, called also *Ady* and *Candy*, were found by the ancient discoverers, and their situation still uncertain, has been so variously assigned, that at last some navigators entirely denied their existence. The Vicomte *Grenier*, among others, in his large *Chart of the Archipelago to the North of Mauritius* in 1776, says that the Isles Adu and Candu are the same with the isles of Chagas and Pedro (Peros) Banhos; but a little while after acknowledging his error, this learned navigator made a public recantation in his *Chart of the Isles and Banks, named Adu and Candu, Chagas, &c.* calling then by the name of Chagas, the Bank of soundings to the South of Adu and Candu.

"It has been questioned," says a gentleman we cannot quote too often*, "whether the Islands Adu and Candu and the London's Bank, are not a part of the Chagas. On a review of all circumstances, I am of M. *D'Après's* opinion, that they are distinct, and lie considerably to the eastward of the Chagas; both the *Salisbury*, 1776, and *Pelham*, 1745, who saw Chagas Island, had many birds in their vicinity; the tracks of those ships prove they cannot lie more to the westward: the only apparent contradiction I know of, is the *Drake*, 1774, but I find by comparison of the track taken from a Chart in Governor *Hornby's* inestimable collection, with the journal, that they passed the London's Bank in the day time, and that they only sounded during the night, and not in the day."

The *Swift*, 1772, also sounding only in the night every hour, and with so little as 30 fathoms, it is not likely they should have got soundings; the spots of shallow water appearing to be of very small extent, and the general depth much more than 30 fathoms.

However, although there be reasons for supposing the Islands Adu and Candu to be distinct from the Chagas, as it is scarce possible to reconcile the *London*, *Favori*, and *Terrible* to the supposition of their being the same, I do not positively affirm that they are distinct.

M. *D'Après*, whose opinion is followed by Mr. *Dalrymple*, speaks thus of these islands; As for the islands Adu, the most recent information we have on this subject is from M. *Moreau*, who met with them in the boat *Le Favori* 1757; by his observations of latitude,

* Mr. *Dalrymple*, in his *Memoir of a Chart of the Indian Ocean*, p. 28.

these

these should lie in 5° lat. South *, but having had occasion to ascertain that the instrument he made use of, gave from $18'$ to $20'$ too much to the North, it should follow that Adu and Candu ought to be $18'$ or $20'$ more to the South, and this difference has been the occasion that Chevalier *Grenier*, who was following the parallel of 5° degrees, could not descry these islands which are seen only when you are very near them. As for their longitude, I think it must be $75^{\circ} 30'$ ($77^{\circ} 55'$ East of London) and not 73° ($75^{\circ} 25'$) as it is supposed by M. *Grenier*; for in examining the track of M. *Moreau*, he ought to have passed in sight of Chagas, or upon the Bank near it, whereas, on the contrary, he perceived neither of them.

On the same day that M. *Moreau* saw the islands Adu, he descried some others to the S. S. E. which appear to be the same as those that were seen by the *London* in $5^{\circ} 39'$ lat. South; long. $5^{\circ} 20'$ from the eastern part of Ceylon, in $6^{\circ} 39'$ south latitude. These are probably the islands CANDU, which had been seen likewise June 30th 1738, by the *Duke of Cumberland*, Captain *B. Braund*, in $5^{\circ} 48'$ lat. South; the journal of that ship describes them as very low land, near which they had no ground at 100 fathoms.

M. *Moreau* having sent an officer and eight men to the Isles Adu, was forced by winds and currents to leave them on these islands. They landed with great difficulty, the 29th March 1757, and remained there till the 2d June, when they put to sea in their boat, and came to Cananor, on the Coast of Malabar; having previously built a Catamaran, to carry the necessary store of cocoa-nuts, for their provision, as well as to supply them with ropes. The islands Adu are 12 in number, the largest of which is not a league round. They are connected together by a reef, which being dry, at low water, gives an easy access to each of them; and they form a circular bay, about 2 leagues diameter, whose entrance, 30 fathoms deep, is on the west side; in the middle of this bay lies a small square bank abounding greatly with fish, chiefly of the shell kind. These Islands are full of cocoa-trees, but have no fresh water, nor any turtle.

Six leagues from the southernmost islands, or Candu Island, the LONDON'S BANK extends about 20 leagues to the southward, with soundings from 6 and 7 to 40 fathoms; then no ground at 120, and 90, for 7 or 8 leagues; and afterwards 31, 15, and 12 fathoms for 2 or 3 leagues on the tail of the Bank in $7^{\circ} 24'$ lat. South. It was discovered in 1741, by the *London*, Captain *Boote*.

* *L'Abbi Rachen* says $5^{\circ} 6'$.

DIRECTIONS FOR THE PASSAGE TO INDIA

BY THE EAST OF MADAGASCAR,

WHILE THE S. E. MONSOON PREVAILS IN THE INDIES.

DESCRIPTION OF THE EASTERN COAST OF MADAGASCAR,

FORT DAUPHIN—FOUL POINT—ANTONOIL BAY, &c.

THIS passage is the best for ships who cannot enter the Mozambique channel before the 15th of August, on account of the little winds, calms, and variations which prevail there in this season, instead of the fresh winds they are sure of meeting with to the eastward. In case they should have a scarcity of water or provisions, from the length of their navigation, they may easily procure those necessaries at Fort Dauphin, Foul-point, and other places of the eastern coast of Madagascar.

When bound to this passage, after you have doubled the Cape of Good Hope, and ascertained the place of your departure, either by the sight of Cape land, the soundings of Lagullas Bank, or by a good observation, you are to stand to the eastward upon the parallels which we have already mentioned, as far as 46° or $47^{\circ} 30'$ long. East of London. Thence steering N. E. then N. N. E. (variation and leeway corrected) you come to the 26th or 25th parallel of latitude, in $52^{\circ} 30'$ longitude, which appears a sufficient caution to prevent the errors of an ordinary navigation, taking care however not to fetch during the night the latitude of $25^{\circ} 45'$, which is that of the southern part of Madagascar; on this coast there are no soundings in the offing, except to the westward of Cape St. Mary.

Should you intend to put in at FORT DAUPHIN, which lies in $25^{\circ} 5'$ lat. South, you must fetch the land in 24° , or at least $24^{\circ} 30'$, not to miss the harbour, as the currents are running towards the South at the rate of 16 leagues in 24 hours. To avoid their effect during the night in approaching Fort Dauphin, if the weather permits, and you should meet with a sandy bottom, the best would be to come to an anchor, but if it blows a strong breeze, you must remain under sail. These violent currents are occasioned by the winds which the French have called *Fort Dauphin's Winds*; they prevail the whole year round to the N. E. and extend about 10 leagues off the coast: you begin to meet with them between the 22d and 23d parallels, where they have scarce any force, but they grow stronger in the 24° of latitude. A ship once to leeward of Fort Dauphin's Bay has no possibility of coming into the harbour; the mountains, which are excessively high in this part of Madagascar, are probably the cause of these local winds.

* Mr. Le Gentil's observation made in 1761, gives $25^{\circ} 1' 4''$ for the latitude of Fort Dauphin, and $46^{\circ} 35'$ for its longitude East of London.

When you come to descry the land in 24° , you perceive a chain of very high mountains*, and in $24^{\circ} 15'$ to $18'$, a hummock in the form of a sugar loaf is distinguished amidst some small hills near the sea-side. Then ranging along the shore at a $1\frac{1}{2}$ league distance, you discover through St. Luce's Islands, some small rocky shoals under water, a little removed from the shore, and between $24^{\circ} 35'$ and $24^{\circ} 45'$ latitude South; continuing to sail along at the same distance, a point will come in sight, S. W. by W. (by compass) appearing at first to stand by itself, with two hummocks more flat than round, and after this another, with hummocks of the same shape: these two points have been often taken for point Itapere, which is the next or third in order, having sharp pointed hummocks; when you come near the second point, ranging along the coast at a league's distance, there are shoals, some of which lie 3 quarters of a league from shore, therefore it is advisable to keep an offing of a $1\frac{1}{2}$ league.

Itapere Rock, whose breakers are always seen, is the surest mark to distinguish the point, from which it is distant about one mile to the South, but there is no passage between: these breakers sometimes rise so high, that you should think at times, it is a ship under sail. Observe also that the whales which abound along this coast blow up the water just in the same manner as you see it breaking upon the rock, and without a good look-out, this similitude may occasion a mistake.

Two leagues W. S. W. (true North) of this Rock lies Fort Dauphin. The coast between Itapere Point, and that on which the Fort stood, forms a cove, or bight, named *Tolongbare* by the natives, and *Anse Dauphine* by the French who were formerly settled there, and of whose fort the remains are still to be seen. The ships generally go within the elbow made by the point.

After having passed Itapere Rock $\frac{1}{2}$ of a league distance, you are to steer for Fort Dauphin's Point, which is encompassed with a reef stretching about a cable's length, and within which is the good anchorage. Point Itapere is to bear E. 5 or 6° S., by compass, and the extreme of the breakers nearest to the anchorage S. E. by E. The larboard anchor is to lie to the north eastward in 7 fathoms, sandy ground; the starboard anchor in 6 fathoms, having 28 or 29 feet water under the ship; a third anchor is carried to lie to the north westward. When there is not sufficient day-light to fetch the road, after you have doubled Itapere rock, you may anchor on the cove, if the weather admits, observing that the quality of the bottom is not the same every where.

Water is got at the landing place by digging into the sand; it will serve for the stock, and for cooking the victuals; but at a small distance in land there are plentiful springs of very good water.

This country is under the government of several chiefs, with whom you must always behave with caution, and the same conduct is to be observed in all the parts of Madagascar where you may have occasion to land.

* The perpendicular height of this chain is supposed to be near 3600 yards above the level of the sea. *Le GENTIL's Voyage dans les Mers de L'Inde*, t. 23. p. 396.

If you should prefer the landing at Foul Point, on account of its greater facility and better anchorage, to that at Fort Dauphin, let the following directions be observed. After you come up to the 25th parallel without seeing the land, nor any of the tokens which indicate its vicinity, you are to steer North, in the day-time, and N. N. E. during the night, as far as $18^{\circ} 10'$ lat. where it is necessary you should make the land to get a sight of PLUMBS ISLAND (l'île aux Prunes). This is an islet in $18^{\circ} 7'$ lat. South 6 miles N. N. E. of Tamatave, and distant about 2 miles from the nearest part of Madagascar: the trees with which it is covered make it easy discernible 5 leagues off.

Three leagues to the N. N. E. of Plumbs Island there is a rocky bank with breakers, and a league farther on the same Rhumb, a shoal with 3 fathoms water on it; one league to the N. N. E. of this there is another with 4 fathoms; these dangers are only one league distant from the shore.

The land of Madagascar from Plumbs Island to Foul Point, is of a moderate height, uneven and woody: it rises afterwards gradually, and afar off a double and treble land is seen of a great height; the shore is a white sand lined with breakers, which run off to sea 2 or 3 cables' length. When Plumbs Island is bearing N. W. (by compass), about 2 leagues distant, you perceive, on the North side, a small hill nearer the shore than the others, and forming two Paps*; they are called the *Paps of Natte*, from the village in that quarter, where the blacks hoist often a white flag. Several vessels have mistaken this place for Foul Point, which lies 3 leagues further North, but this error will be avoided if you observe that Plumbs Island is visible from Natte, but cannot be seen from Foul-point; if therefore you bring it (Plumbs Island) to bear S. 30° W. by compass, when you sink it in the horizon; you may then steer N. 15° East for Foul-point, which bears in that direction from you.

The above directions must be followed only during the season of the S. E. winds, for in the season of the N. E. winds you are to stand directly for the parallel of Foul-point, without making the land to the southward of that place, which would expose you to miss the anchorage.

The bight of FOUL-POINT, where ships anchor, is formed by a large reef which begins on the shore, a mile below the village, and extends afterwards $\frac{2}{3}$ of a league to the N. N. E. (true North). You must come no nearer this reef than a $\frac{1}{4}$ of a league, and range along it, so as to double its northern point at a good cable's length: you distinguish the breakers, but they shew less at high water, and with a fresh breeze. Thence keeping the wind, you come to an anchor under shelter of the reef in 6 fathoms, sand and mud. The north point of the reef will bear E. by N. and E. N. E. (by compass) the south point of the bight S. by W. 5° W. the village S. W. 1 mile; the land farther north towards Manivoul N. by E, 6 or 7 leagues: you moor across E. N. E.

* These inland mountains, called also *Foul-point Paps*, and which are the mark for this place, lie about 15 leagues to the westward. There are four of them, but in coming from Plumbs Island, two only are seen.

and W. S. W. if you are to stay there some time, it is requisite you should have a third anchor to the N. W.

Within the reef there is a deeper recess, or hole, where large ships can enter, the depth being 6 or 7 fathoms; but it is not very safe, and the cables are exposed there to be cut by the rocks.

The village of Foul-point has been found by repeated observations to be in $49^{\circ} 48'$ East of London, latitude $17^{\circ} 40'$ North. Plenty of good provisions may be procured at this place, but the harbour is full of shoals, over which the boat cannot go at low water; observe also that Foul-point is to be frequented only in the best season, the reef affording no shelter but in ordinary weather. They have here, as we observed above, two sorts of winds succeeding each other periodically, viz. from South to S. E. between April or May, and October or November, and the N. E. winds during the rest of the year. This kind of Monsoon is prevailing in all these seas as far as the parallels of Mauritius and Bourbon, and a great way beyond them.

A certain sign of land in the season of the N. E. winds, and even during the greatest part of the year, is a large bank of clouds very black and very even, which gathers during the day, and extends all over Madagascar, the sun being hid behind it. When seen from the land this cloud has about 10 degrees elevation above the Horizon; it can be perceived at a distance of 12, 15, and 20 leagues at sea, and gives a sure notice of your approaching the land.

We are now going to describe St. Mary's Island, and Antongil Bay, where vessels may also anchor.

Thirteen leagues and a half N. N. E. 5° E. (true North) from the road of Foul-point, is the south point of ST. MARY'S ISLAND, in $17^{\circ} 5'$ lat. South. The island, which the natives call *Nossi Ibrabim*, or Abraham's Island, extends to N. E. by N. as far as $16^{\circ} 33'$, where you meet with its north point. There is a fine channel between it and Madagascar, through which ships of all sizes may pass; the narrowest part, which is towards the middle of the island, is about 5 miles broad. From Laree Point a bank stretches off about a mile to the E. N. E. with only 2 or 3 fathoms on it; Lokinsin Point is also surrounded with a reef, but in the middle of the channel the depth of water is from 40 to 45 fathoms.

The south point of St. Mary's is formed by a flat islot, separated from it by a very small channel, and round which is a reef that runs about $\frac{1}{2}$ a league to the southward. The whole eastern part of St. Mary's is likewise surrounded with breakers, and in some places off this southern part, you have from 18 to 20 fathoms water.

On the west side, about 2 leagues from the south point, lies a bay near 3 miles broad, N. E. and S. W. and at the bottom of it an islot named *Quail's Island*, near which small vessels can find shelter. The French, in 1750, had there a settlement, which they were forced to abandon by the badness of the climate and of its inhabitants. In

order to moor in the bay, you are to range along near the south land of St. Mary's, in 18 or 20 fathoms, and after having doubled a huge rock that stands near the south-west point, you will drop your anchor to the true North of Quail's Island, in 18 or 20 fathoms; from this birth Point Laree bears true North 4 leagues off.

When you are bound to Antongil Bay, which lies to the North of St. Mary's Island, you are to keep mid-channel between the said point and the land of St. Mary's; then you steer N. by E. (true North) which carries you to the opening of the bay; you may likewise, when you come from the offing, go to Antongil Bay, in passing to the eastward of St. Mary's Island.

ANTONGIL BAY, named *Mangababes* by the natives, takes its name from *Antonio-Gil*, a Portuguese Captain, by whom it was discovered. It is 13 or 14 leagues long from North to South, and 7 or 8 broad, N. E. by E. 5° N. and S. W. by W. 5° S. between Cape Bellones and Point Baldrish. In entering this bay, you may coast along which side will suit best the direction of the breeze; the depths of water, as well as the quality of the ground, are pretty near the same at three quarters of the bay, where they decrease to 30, 25, 20, and 15 fathoms.

In the bottom of the bay there are several islots, the principal of which, called *Maros*, or *Isle Marotte*, which has not more than 18 or 1900 yards in extent, from N. E. to S. W. is about one mile distant from the nearest part of the coast: it lies in $15^{\circ} 25'$ lat. South; there are four other islots smaller than this to the South of it, the farthest of which is only 2 leagues off. The common anchorage is to the northward of *Isle Marotte*, at a musquet-shot, over against two small sandy coves, in 11 or 12 fathoms: wood and water are got here with great convenience, and you are safer in your tents than on the main island, where you must trade for provisions. The river lies true N. N. W. from *Marotte Island*; boats may enter it, and the water rises 5 feet in the new and full Moons.

You come out of Antongil Bay to go to the northward, in ranging along the eastern coast, availing yourself to that end, of the ebbs and breezes, and steering towards Baldrish point; South of this point lies the small Island of *Babenter*, to the southward of which ships anchor that are trading in this place: the shore, which extends 2 leagues eastward, is lined with a reef stretching 2 miles in breadth to another islot called *Mopatte*, from whence the coast runs 4 leagues N. E. by N. (true North) then to N. N. E. 4° N. as far as Cape East, that lies in $15^{\circ} 15'$ latitude South. As it is also lined with reefs which in several places project about 2 miles into the sea, it is necessary you should make an offing of 1 league at least. From Cape East the coast lies N. by W. 3° W. as far as Vohemare Bay, in $13^{\circ} 26'$ latitude South, from whence it runs in the same direction to CAPE AMBRO, or *Natal*, the northernmost point of Madagascar, in $12^{\circ} 5'$ lat. South. An observation which is not to be omitted concerning the eastern coast of Madagascar is, that Fort Dauphin is generally healthy at all times; that from Foul-point,

point, which is unhealthy only in a bad season, the country is more so as you go up northward: and to preserve your crew from the diseases prevailing there during the bad season, you must as it draws near, and from the end of November, let none of the people lie ashore, and order every body to be on board before night.

When vessels do not put in at Madagascar, and sail only to the eastward of that Island, it is requisite nevertheless that they should get the sight of it, to ascertain the place they are at, and continue their course to India with safety. Thus, after having fetched the 25th parallel of south latitude, as we have said already, if, in steering North during the day, and N. N. E. in the night time, a ship should find herself in 15° lat. South without seeing Madagascar, which would be the effect of a difference towards the East; then she should steer W. N. W. by compass till in sight of Madagascar, and having made the land to 4 leagues distance, she should coast along as far as Cape Ambro.

The currents in rounding this cape, take their run very rapidly to the westward; so that ships bound for Querimba or Mozambique, round the north end of Madagascar, are to expect a difference, towards the West, proportional to the time employed in the passage from Cape Ambro: several have found this current of 20 leagues velocity in 24 hours.

As to the ships who are sailing to the Indies, after they have made Cape Ambro, they must steer North without any easting, and continue in this manner till 5° lat. South, then N. E. as far as the Line, and thence direct their course as we have already mentioned.

DESCRIPTION OF THE COAST OF AFRICA,

FROM THE EQUINOCTIAL LINE

TO CAPE GUARDAFUL, AND ISLE OF SOCOTRA.

FROM the River dos Fugos, situate under the Equinoctial Line, the coast extends 27 or 28 leagues to Brava, and then inclines to the N. E. 3 or 4° E. as far as Cape Bassas. The first place, inhabited by the Arabs, is BRAVA or *Barva*, in $1^{\circ} 15'$ lat. North. This land, covered with very little wood, is known by 4 steep bluffs of white sand; on the shore there are two reefs with breakers. MAGADASHO, at the mouth of a large river, is the chief place on this coast, in $2^{\circ} 30'$ lat. The land appears there higher, with several buildings like towers, which are Mosques or Pagodas. One league from shore there is no ground, but you are not to approach it nearer than 3 or 4 leagues in sailing for Cape Bassas, steering to the N. E. in the day time, and N. E. $\frac{1}{2}$ E. during the night.

The latitude of CAPE BASSAS, so called on account of the reefs which surround it, is about $4^{\circ} 50'$ North; the land is even and steep, and projects more in the sea than the rest of the coast; the reefs upon which the sea breaks, with a high wind, extending 2 or 3 leagues off, you must be very cautious how you come near them in the day-time, and must not approach them in the night nearer than 5 or 6 leagues. The land to the northward lies then N. N. E. it is likewise even and steep as far as the 7th degree of latitude, with some little thickets, and may be descried at the distance of 9 or 10 leagues. In coasting along this part several bights are seen, of which we have no account; you are to sail along in the day-time only; during the night, on the contrary, it is necessary to steer a quarter of a point wide of it.

In about $8^{\circ} 30'$ is situated BANDEL D'AGOA, or *Negro Bay*, whose south point is remarkable by a bluff called Morro Cobir.

CAPE DELGADO lies $1^{\circ} 20'$ farther North, and 4 leagues to the southward of it is seen another point; the land between these two can be perceived 12 leagues off. It is very even at the top, steep, and has white spots along the sea side. The chief mark to know this cape in coming from the southward is, that the coast seems to disappear, and forms a large bay, which must not be entered without the utmost precaution, not only on account of its being unknown, but because with S. E. winds it would be very difficult to come out.

Being off Cape Delgado, 3 or 4 leagues, CAPE DORFUI may be seen N. by E. it appears when you come from the South, like an island sloped to seaward; to the westward of this is a mountain like a barn, joined with it by low ground, so that at a distance they appear separated. The land to the northward of Cape Dorfui cannot be perceived till the cape bears N. N. W. This cape, which is very high and steep, is in about $10^{\circ} 35'$ lat. North.

From Cape Dorfui to that of Guardafui, the course is North, distance 26 or 27 leagues. Between the two, and close within Cape Dorfui, is a great bay; thence the coast runs N. N. E. as far as Cape Guardafui. These lands are very high, being steep white cliffs, rugged at the top; they appear so within half a league to the southward of Cape Guardafui, from whence this extremity, as it descends, seems to form several steps. The cape itself is low land, but steep towards the edge; its latitude is found to be about $11^{\circ} 45'$. Observe that this coast is very bold, but you have soundings, from 20 to 45 fathoms, 5 or 6 leagues from shore.

The land of CAPE GUARDAFUI, which is generally supposed to be the easternmost point of Africa, is certainly more remarkable than Cape Dorfui, to which several Charts have given this distinction. Its latitude is about $11^{\circ} 50'$ North, but the longitude is not so well ascertained. M. D'Après places it in $52^{\circ} 38'$ East of London; M. Le Gentil in $49^{\circ} 45'$, and M. Dalrymple, from observations made in 1774 by himself, on board the

Swallow

Swallow sloop of war, in $51^{\circ} 0'$, which becomes a medium between the two French observers.

Above 40 leagues eastward of Cape Guardafui lies the Island of SocOTRA. The body of this island lies in $12^{\circ} 25'$ North; it is about 27 or 28 leagues in length from E. by S. to W. by N. 6 or 7 broad, and very mountainous. When the easternmost point of the high land bears either North or South, it makes not unlike a dolphin's nose; and thence it trenches away to the eastward for about 3 miles, till it terminates in a low point, from which a ledge of rocks, even with the water, runs to the S. E. about a league.

There are two anchoring places; that for the easterly Monsoon is at the west-south-west part of the island, opposite one of its coasts, which extends about 10 leagues S. E. and N. W. To sail to this anchorage, if to the eastward of the island, coast along shore in 20 fathoms, as far as the west-south-west point of the island, which is high and bluff: by keeping that depth, the bottom is sandy; but in 15 fathoms there are rocks; so that you get no anchoring there, in case of a calm, without the hazard of losing your anchor. Having passed this high point, keep in from 15 to 25 fathoms; and when you are opposite a high round hill, in the middle of this part of the coast, near which there is another smaller split in the middle, and this latter is bearing North, you may anchor in 18 fathoms, sandy ground. Here refreshments can be had, but the water is unpalatable; there is better to be had in some places thereabouts, but with great difficulty.

The Bay of *Tamarida*, on the north side, where the Prince or Viceroy resides, is the most convenient place in the island for refreshments and provisions, but the anchorage is not good, being too near shore. This place is known by a point of sand, which makes the eastern side of the bay: after you have doubled it you may perceive the town, opposite which you anchor, $\frac{1}{2}$ a league from the shore in 10 fathoms, sand and coral. The water is very good and the provisions cheap. On the north coast coming from the eastward, as you sail towards Tamarida Bay, you may observe two white sand hills, the westernmost of which is much the largest. The town lies about 4 miles to the westward thereof; under the highest and craggiest part of the land, you may anchor about 2 miles off shore in 9 or 10 fathoms, the town bearing South or S. by W.

"When Socotra," says Captain *Blake*, "bore from the W. $\frac{1}{2}$ N. to S. W. which was the easternmost end of the island, two sand hills were seen, which are very remarkable. We made ourselves to be in latitude $12^{\circ} 47'$ North, when the island bore from the S. S. W. to westward, off shore 3 leagues, and could get no ground with 70 fathoms line. About 10 leagues to the westward of the above sand hills, you will see two others, with a low flat point running from the westward of them; and above this point lies the town of white buildings, called Tamreed or *Tamarida*: after you are past the point you have 30 fathoms, about 5 leagues from shore, and gradual soundings to 8 or 6. The town bears S. W. by S. with very high land over it, in notches like chimnies.

The

The water here is very good, it runs from the mountains into a sandy valley among date trees; you cannot miss finding it, being only a quarter of a mile from the town. The natives are very civil to strangers, but very poor, and the only commodity to trade with them is rice, for which we had in exchange some cows, goats, fish, dates, &c. we got also good aloes, and some parcels of *Sanguis Draconis*."

About half way between Cape Guardafui and Socotra, you meet with the small Island of *Abdalcuria*, remarkable by its two hummocks; and to the East of it, nearer the main land, with the two Isles called the *Brothers*; five leagues off the north-west end of Socotra lie the *Saboyna* Rocks, called also the *White Rocks*, which at a distance appear like two ships under sail.

DESCRIPTION OF THE COAST OF AFRICA

TO THE WESTWARD OF CAPE GUARDAFUI,

AND OF THE COAST OF ARABIA,

FROM CAPE ADEN TO THE STRAITS OF BABELMANDEL,

FROM THE FRENCH NEPTUNE ORIENTAL.

FROM Cape Guardafui to Mount Felix the course is W. by N. a little northerly, 14 or 15 leagues. The coast continues high and steep for 9 or 10 leagues; the rest as far as Mount Felix is a barren plain, and uneven along the sea-side; but within land are high mountains. This shore is safe and without danger; nevertheless in the night, steer a little wide of the two Capes, on account of a point of land projecting between them.

MOUNT FELIX is a steep and high cliff upon a low land, which makes it appear like an island when you come from the eastward: in clear weather it may be seen 15 or 16 leagues off.

Having passed Mount Felix, you may see the low land continue along the sea side for about 5 leagues to the S. W. Thence the land is very high for 5 or 6 leagues, and terminates in a plain of a middling height, which lies W. by S. about 2 leagues. From the west end of this plain to Cape St. Peter, the distance is about 6 leagues. This last coast is high land, bordered with a chain of rugged mountains, whose extremity is what is called CAPE ST. PETER; and about 2 leagues from this cape, is seen by the sea side a

white spot, looking like a small sandy bay. Mount Felix and Cape St. Peter lie E. N. E. and W. S. W. distant 16 or 17 leagues.

From Cape St. Peter to Mette Island, the course is W. by S. about 21 leagues: the coast between them forms a bight, where the land is of a middling height and very uneven, but farther in are high mountains.

About 3 leagues to the eastward of Mette Island, is a peninsula of a moderate height, and covered with hummocks which appear separate; between this peninsula and the island there is a bight, whose shore is not high, but the ridge of lofty mountains continues within land. METTE ISLAND, which lies very near this peninsula, is of a middling height and covered also with small hummocks, the highest of which, in the center of the island, is shaped at the top like a Dutchman's cap: the interior part of this island and of the whole coast appears extremely dry and barren.

From Mette Island to BURNT ISLAND, called also *White Island*, and *Bird Island*, the course is westerly 19 or 20 leagues, the main land between the two moderately high. This island, which lies about 3 leagues from the continent, is nothing more than a very high rock, that may be seen 10 leagues off; the dung of the birds which cover it makes it appear white. When it bears S. W. it appears very round, and encompassed with other little rocks, but when bearing South it seems to extend $\frac{1}{2}$ a league East and West.

From Burnt Island the coast continues to the westward, and very mountainous within land; but as it is seldom frequented, no good account can be given of it; for the ships generally leave the African coast when they have reached Burnt Island, and stretch over to that of Arabia, near Cape Aden.

CAPE ADEN, in coming from the westward, looks like a high island, cragged at the top, and upon a nearer approach resembles two islands; it lies in about $12^{\circ} 45'$ latitude North, and when bearing N. E. appears like a very rugged mountain, its southern extremity being lower than the northern; to the N. W. of this cape there is a mountain about the same height, equally rugged, high on the south-east side, and low on the north west, and between the two, little hillocks are seen resembling huge rocks, which being on a low land imperceptible at the distance of 8 or 9 leagues, appear separate.

From Cape Aden to the low point of CAPE ST. ANTHONY, called Cape Arimora by the Arabs, the course is W. by S. 19 leagues; the land between the two is low, with some sandy downs till within 6 leagues of this point, where another large point appears, which is formed by a high mountain inclining to the westward and stretching away inland. This large point is very rugged, and Cape St. Anthony is low, but the ridge above mentioned makes the cape appear high, when you come from the southward.

If by contrary winds you are obliged to turn it along the coast, come no nearer than 13 fathoms, nor sail above 30 from it, sand and coral rocks, that you may anchor in case of a calm; otherwise you might be exposed to the violence of the tide, which sometimes

times runs very strong, and be thereby driven upon the Abyssinian Coast, towards the Gulf of Zeyla, where you would be in danger of being lost. There is a small shoal off the low point, but it does not run far out, and by keeping in the above depth you have nothing to fear.

From the low point of Cape St. Anthony to *Bab-el-Mandeb*, commonly called BABEL MANDEL, and by the sailors THE BABS, the course is W. by N. northerly, 15 or 16 leagues. Between them the land is low along shore, forming a deep bay, which makes the cape appear detached; and the ridge of mountains above mentioned extend to the N. W. till 5 or 6 leagues from Cape Babel Mandel; this cape terminates in a moderate height, and like a gunner's quoin, rising gradually from North to South, the peaked part to the northward, and blunted again a little more northerly.

In foggy weather, care must be taken to avoid entering this bay, as several ships have been lost there, thinking to sail into the straits of the Red Sea, and mistaking Cape Babel Mandel for the island of the same name. Nevertheless it is easy to avoid the mistake, this cape making as above described, and the island being low and smooth, with its two extremes alike from the middle.

Between the island and the cape is the LITTLE STRAIT, so called to distinguish it from that to the southward. This strait is 4 miles broad; there is no danger if you observe to keep rather nearer the island than the cape, in irregular soundings from 20 to 10, 14 and 9 fathoms, coarse sand, and now and then 7 fathoms upon a small bank, where there is no danger.

Having passed this strait, if there is not time to get to Moka by day-light, it is better to anchor than to run the hazard of overshooting it: in this case you must shut up the straits, and anchor a little to the northward of Cape Babel Mandel, where the water is always very smooth; whereas if you anchor with the mouth of the straits open, you stand a chance of losing your cables and anchors.

Either coming in or going out of the Red Sea, it is better to pass through the strait than to the southward of Babel Mandel Island, because in a calm you are there very often tossed up by the currents, and no anchoring ground is to be got but very near the island.

THE RED SEA, OR GULF OF ARABIA.

INSTRUCTIONS FOR COMING INTO THE RED SEA, AND GOING TO MOKA,

WITH A DESCRIPTION OF THE

AFRICAN AND ARABIAN COASTS.

By an ENGLISH OFFICER.

IF you are late in the season, that is in the latter end of April or beginning of May, you must avoid coming near Socotra, for you have a very strong current which sets to the northward about that island, and between it and Cape Guardafui; so that it is better not to make it, but to keep in 10° or 11° latitude till you have passed to the westward. We may quote the following example: the *Stratbam* Indiaman sailed from Surat 26th of March, 1752, in company with the *Dadala* country ship; they parted company on the 12th April, in $13^{\circ} 12'$ North, and on the 14th made the east end of Socotra; continued working in sight of that island 13 days, with the wind from South to W. S. W. having a strong current against them. The *Dadala* stood to the southward of 3 degrees, then met with a fair wind, and had a quick passage, whilst the *Stratbam* was frequently becalmed and in some danger of losing her passage.

If you are apprehensive of the Monsoon having set in, and should meet with it, you must stand to the southward, and even cross the Line to 8 or 10 degrees South, where you may depend on meeting with wind to run down your westing. You must endeavour to make the land about $10^{\circ} 30'$ North. If the S. W. Monsoon is set in, as it will be necessary to round Cape Guardafui very close, the shore between it and Mount Felix (as we have said before) is bold, so that if occasion requires you may come within a mile of it without any danger. A little to the eastward of Mount Felix bearing W. by S. distance off shore about $\frac{1}{2}$ mile, you have soundings at 35 fathoms, ooze and sand, and from 30 to 20, sandy ground with coral, within a $\frac{1}{4}$ mile of the point. About W. S. W. from Mount Felix, distance 3 leagues, lies a long sandy point, between which and the mount you have shoal water from 6 to 10 and 14 fathoms, so that you must keep your lead going, not coming nearer than 2 miles of the shore, till you are passed the point, when you may again haul inshore out of the way of the current.

As you run along this shore, about 33 or 35 leagues to the westward of Cape Guardafui, you will see the river St. Pedro, or St. Peter, in the bottom of a deep bay, and to the westward of it 3 islands, not far from the shore. The next thing remarkable is Burnt or White Island (see the preceding section), which is about 80 leagues westward of the cape, and about 4 miles from the main: when it bears South, or S. S. E. the east end makes like 3 sugar loaves; and if you are about 4 or 5 miles off, with the before-mentioned bearings, you will see a small rock at a little distance from that end.

If the wind is favourable you put off from this place, for Aden, which bears about N. W. distance 55 leagues. About 3 leagues from Aden you have good soundings in 40 fathoms. Your course towards Cape Arimora, or Cape St. Anthony, is between W. by S. and W. S. W. keeping in about 30 fathoms water; but take care as you pass that cape not to come within 3 leagues of the shore, on account of a dangerous bank; when the body of the cape bears N. N. W. distance about 3 leagues, you will shoal your water suddenly from 24 to 15 fathoms at one cast, and in some places but 3 fathoms, foul ground. In passing Cape St. Anthony you have regular soundings, from 30 to 35 fathoms, along shore till you bring it to bear E. N. E. when at once you fall into deep water, having no soundings at 40 fathoms, but hauling up for a while N. N. W. you will get them again at 34, 29, and 27 fathoms. If you are sailing here in the night, and deepen your water suddenly, you may depend upon being 8 leagues from Babel Mandel.

Captain Foot of the *Latham*, who went from Surat to Moka in 1758, expresses himself as follows in his journal.

"Sailed from Surat 8th of April, and arrived at Moka the 12th of May; being pretty late in the season, went to the southward as far as $9^{\circ} 50'$ and 10 North, and met with light winds, variable, but mostly from the N. E. and S. E. As we drew nigh Cape Guardafui, and to the westward of Socotra, found very strong northerly currents, of 15 and 20 miles in the 24 hours. We made the land in $11^{\circ} 12'$ North, and that day had a set to the northward of 34 miles, and rounded the cape very close. From the cape to the straits of Babel Mandel, found the preceding instructions very just, particular, and true. The *Gungeva* country Ship, who left Surat the day after us, and made Socotra in her passage, joined company with us off Cape St. Peter; we found she went much better than the *Latham* in light winds, which might be the reason of her having a better passage."

From the entrance of the Straits of Babel Mandel to MOKA ROAD the course is N. N. W. 13 or 14 leagues; the land is low along the sea side, but within are high mountains. Keep about $1\frac{1}{2}$ or 2 leagues off shore in 9, 10 and 12 fathoms water. On the beach you may perceive a little sand hill, which is somewhat nearer to Moka than to Cape Babel Mandel. The approach to the town is known by the date-trees which extend about 2 leagues to the southward along the shore; these are the only

trees to be seen along this coast, which is very barren. When you are hereabouts come no nearer than 13 fathoms, in order to avoid a bank surrounding the road on the south side, with only 2 fathoms on it; and which is the more dangerous as it is steep to, for from 10 fathoms you suddenly come to have 3 or 2. You keep in 13 fathoms till the minaret or spire of the great mosque is brought to bear S. S. E. when you may haul in for the road, and anchor in what depth you think proper: you have a good birth with the following bearings; namely, the North Fort S. E. by E. The South Fort S. by E. The Great Mosque E. S. E. off shore 3 or 4 miles.

DIRECTIONS FOR SAILING FROM CAPE GUARDAFUI TO BABEL MANDEL AND THROUGH THE STRAITS;

By Captain NORTON HUCHINSON, of the DODDINGTON, 1753.

“ **A**FTER making Cape Guardafui in March, April, or May, the African shore, which is very bold, must be kept close aboard. About W. $\frac{1}{4}$ N. 16 leagues from the Cape, is Mount Felix, that runs out from the land considerably into the sea, W. N. W. $\frac{1}{4}$ W. Forty-four leagues from the mount, is a remarkable hill appearing flat on the top, with one inclosed round it, and which seems to be an island; the course from this to the White Rock, or White Island, is West southerly 20 leagues, still observing to keep within 3 or 4 miles off the shore. This island (see the preceding section) is very craggy, and I judge it to be about 2 leagues off the continent; it is the mark to haul over to the Arabian shore, N. W. or N. W. by W. with which you will make the land about Old Aden; we falling in with it a great distance, and overshooting it before morning, could not make any observations on this land.

“ The first mark for the STRAITS OF BABEL MANDEL, is Babel Mandel Point, which makes like a quoin, and is joined to the main by an isthmus of low land, forming a deep and dangerous bay; I have heard there are sometimes strong insets into it; and you are liable to be deceived here, the easternmost point being high and craggy, and the isthmus at the bottom of the bay not to be discerned till very nigh, and appearing much like the straits mouth, by the most general descriptions; many ships have made this mistake, one of which very lately and very fatally.

“ To avoid these dangers, keep Babel Mandel Point, just open with the starboard bow; and in 17 or 18 fathoms water, stand towards Babel Mandel Island, which with the point makes the straits. This island is but low, and not well seen above 3 leagues distance; upon the main there is a very remarkable piece of land on the top of a hill, called *Chimney Hill*, from its shape; when this bears N. E. by E. easterly, you will

first discern Babel Mandel Island; the course through the straits is between N. W. and N. W. by W. keeping above two-thirds over to the island side; but your lead is your best guide; the least water you will have, with this course, is about $6\frac{1}{2}$ fathoms, and that when you are abreast of the center of the island.

"The best mark to know when you are clear of the knowl of sand, and when to haul in for MOKA ROAD, is the highest Mosque bearing E. by S. or shut in with the *Neat's Tongue*, about a sail's breadth, and not to come into less than 5 fathoms, there being great overfalls; when you have these bearings haul in East, or E. by S. till you bring the South Fort E. S. E. and you will have good anchoring in 5 or 6 fathoms water, about 3 miles from the town.

"I have made the following remarks on the soundings, &c. in the southern channel, going out of Moka Road.

"The northernmost fort E. by N. $\frac{1}{2}$ N. The southernmost fort E. S. E. $\frac{1}{2}$ S. The great Mosque E. by S. depth of water $2\frac{1}{2}$ fathoms, which deepens to 4 and $4\frac{1}{2}$; then the northernmost fort E. by N., and the southernmost E. by S. the great Mosque East: at these last bearings, the southernmost fort almost the middle of the *Neat's Tongue*, the great Mosque a little to the northward of the governor's house, steer away S. E. till the northernmost fort is E. N. E. depth $6\frac{1}{2}$ fathoms; stand right in for the fort, shoaling gradually in $\frac{1}{2}$ less than 3, and then deepen to $3\frac{1}{2}$ fathoms.

"Steered off West with the flood tide; the shoalest water is $2\frac{1}{2}$, then deepens gradually to 5 fathoms. Steered S. E. easterly, the northernmost fort bearing E. N. E. and $2\frac{1}{2}$ less than 4: regular till the fort bore N. E. by E. the great Mosque E. by N. depth $3\frac{1}{2}$ fathoms, and mark under water 3, *Zee-hill* bearing S. E. by S. just open to the southward of the highest point of trees to the southernmost fort; then hauled near wind and steered W. $\frac{1}{2}$ S. having $\frac{1}{2}$ less than 4 fathoms. Steered again W. by N. and W. by N. $\frac{1}{2}$ N. and shoaled to a foot less than 3, then regular to 5 and $5\frac{1}{2}$. The *Neat's Tongue* and forts shewing, as in the following bearings: viz. The northernmost fort E. N. E. regular soundings to 7, and next cast to 10 fathoms. The southernmost fort E. by S. $\frac{1}{2}$ S. and with the *Neat's Tongue*, as in the second bearings, tacked, and in N. E. $\frac{1}{2}$ E. soundings 4 or 5 casts, mark under water 10 and $9\frac{1}{2}$. The southernmost fort then bearing E. S. E. and the *Neat's Tongue* as in the third bearings, regular to $4\frac{1}{2}$ fathoms. The great Mosque will be just to the second hill above the *Neat's Tongue*, as in the fourth bearings; then shoaled to 3 fathoms, which I take to be the spit from the knowl, being the shoalest water; then the soundings on the same course, 4, $4\frac{1}{2}$, $\frac{1}{2}$ less. 4, $3\frac{1}{2}$, $4\frac{1}{2}$, 4, the southernmost fort S. E. the Mosque E. by S. *Zee-hill*, just shut in with the first point of trees, next the southernmost fort; the greatest distance from the town about 3 leagues."

EXTRACT

EXTRACT OF THE JOURNAL OF THE LATHAM, bound up the Red Sea to
Jeddah, in 1758.

" AT Sun rise having a pleasant gale, saw the Island Mehun or Babel Mandel, bearing N. W. $\frac{1}{4}$ W. at the same time saw three openings or inlets, all of which appeared like the straits (being deep bays), we then steered for Babel Mandel Island till within about $\frac{1}{4}$ of a mile of it, steering right for the body of the island. Sounded from 23, 24 and 22 to 23 fathoms, when entering the straits from 21 to 10 a 14 $\frac{1}{2}$, 14, to 7, a 7 to 16 $\frac{1}{2}$, a 16 to 36 fathoms; from the straits to Moka, soundings 16, 15 $\frac{1}{2}$, 15 $\frac{1}{2}$, 14, 14 $\frac{1}{2}$, 13, 14, 14 $\frac{1}{2}$, 16 $\frac{1}{2}$, 13 fathoms. The highest Mosque bore E. S. E. 6 or 7 miles, and when Babel Mandel Point bore South, we were in the narrowest part of the straits; for from the island runs out a bank (where the *Escort*, Captain *Evans*, was aground) so you must come no nearer than 7 fathoms, for the next cast you will be on the bank, being steep to. Directly opposite to this point, on the other side of the straits, runs a small ledge of rocks which are above water. Our course to the straits was W. N. W. through the straits N. N. W. and when Babel Mandel Point bore South, hauled up North $\frac{1}{4}$ W. and deepened the water very fast.

" MEHUN, or *Babel Mandel Island*, which is easily known by its being a low, barren and plain island, with a white sandy beach, forms the straits to the southward. The land to the northward is very high and cragged with hummocks, the most of them terminating in white sandy tops. In our return from Moka we came through the broad straits.—Note. The *Gungova* (mentioned, page 154) lost her passage to Jeddah, and got only two days sail to the northward of Moka.

" In sailing through the straits found a very strong current in our favour; kept the long boat a-head all the time, and went under our topsails at the rate of 7 knots.

" Sailing from Moka up the Red Sea, you stand between N. by W. and N. by E. between the main and the islands, keeping soundings from 20 and 28 to 30 fathoms; when you are near the islands you have 30 and 35 fathoms; running about 65 miles you will be abreast of the north end of *Gebel Zeghir*. In the evening the Island *Gebel Aros* bore West, and the Island *Gebel Zeghir* N. by W. the middle of the Island W. N. W. distant off shore 6 leagues; little wind all night, depth of water a 33 to 23 fathoms. In the morning shoaled our water a 23 to 13, and then 9 fathoms in a short time, sand and mud. At four got into 7 fathoms, and let go our anchor, it being calm. At day-light we were about 4 leagues from the Moka shore, by which I find we had a current setting to the eastward. This bank runs from the main about 4 leagues: we sounded, and had from 7 to 8 fathoms, within 3 miles of the shore; a little to the westward we had

14 and 15 fathoms; it is also steep, and you will be from 20 to 7 fathoms in two casts of lead. Point Kimerah bore S. E. and Point Namel N. N. E. distant off shore 4 leagues. This bank lies 10 or 15 leagues northward of Moka, the Island of Gebel Zeghir N. W. $\frac{1}{2}$ W. and the Island Gebel Aroe W. S. W. distant 9 or 10 leagues. In this bay at *Boba* is fresh water.

" If you are sailing and are passed the north end of Gebel Zeghir, you must haul in for the Arabian shore, and run down in 18, 16 or 15 fathoms; but about 6 leagues to the northward of Moka, there is a bay, where you are obliged to steer S. W. and S. S. W. to keep in the aforesaid soundings. This is a good mark in the night, or when it is so hazy that you cannot see three small hills which lie near the shore, and distant from Moka about 5 leagues.

" The course from Gebel Zeghir to *Sabagar Islands* is N. W. by N. distance about 60 miles. When you pass Gebel Zeghir, sailing to the northward, and it bears W. S. W. you will shoal your water very quick, so that you must be very careful of your lead, and not come under 21 or 22 fathoms, for hereabouts is a shoal that will take up a large ship.

" If you keep near the Arabian shore, you will have soundings up as high as *Gebel Tar*, and these soundings are from 12, 20, 30, and 40 to 55 fathoms, fine sand. When you are distant from the southernmost island about 6 miles, you have 50, 45, and 40 fathoms, within a cable's length of the shore, but you soon lose your soundings unless you keep to the eastward, as the bank is steep. There is a dangerous rock, which lies to the eastward of these islands, and is about three miles distant from them; it is almost even with the water's edge, and about 50 yards in length; I could not discover any breakers round it. Good marks to shew you that danger are, when the northernmost of the *Sabagar* bears * N. W. by N. then you have that rock and the island in one; or when the South island, from the northward bears, W. N. W. northerly, then you have that rock and the island in one; or when abreast of the southernmost island, the peak upon it bearing W. $\frac{1}{2}$ N. distant 3 or 4 miles, the rock then bears N. by W. $\frac{1}{2}$ W. 4 or 5 miles. If the southernmost island bears W. by N. and the northernmost N. N. W. the rock then bears N. $\frac{1}{2}$ W. depth of water 55 fathoms, distant off the nearest island, which is that with the peak upon it, about 5 miles, or from the rock, about 6 or 7 miles.

" The northernmost of the *Sabagar* lies in lat. $15^{\circ} 10'$ North. The Island *Rafab* or *Basbal*, has its south end in about $15^{\circ} 15'$ North; it bears from the northernmost of the *Sabagar* N. E. by E. $\frac{1}{2}$ E. distant 6 or 7 leagues, and from the Island *Gebel Tar* about S. E. by E. *Rafab* is very low and barren, not to be seen above 4 leagues off, from the deck. Off this lies another small island, and they almost join; you have soundings off this island from 55 to 40 fathoms.

* There appears to be several mistakes, concerning the rocks and the bearings of the islands, in this part of the Journal.

" The Island Gebel Tar, whose northernmost end lies in lat. $15^{\circ} 32'$ North, bears from the Sabagar N. N. W. distant about 7 or 8 leagues. It is dangerous coming near this island, if you have but little wind, for the current will set you upon it, and there is no anchorage, within a cable's length off the shore, except on the north-east part, where you have good anchoring ground. Between this island and that of Balhal, you have soundings 35, 30 and 25 fathoms, sand and rocky ground.

" To the westward of this island lies a dangerous shoal, with great overfalls, upon which a French ship got ashore in the year 1751, and with great difficulty got off. The island then bore about E. by S. distant 10 or 12 leagues. You must not come under 25 or 30 fathoms.

" In latitude $16^{\circ} 40'$ North, and by reckoning $1^{\circ} 41'$ East from Jeddah, saw an island on the eastern shore bearing N. E. by E. sounded and had 23 fathoms, rocky: we steered S. by E. 40 miles, and then saw Gebel Tar S. W. 6 leagues.

" In latitude $16^{\circ} 50'$ North, and $1^{\circ} 0'$ distance East from Jeddah, struck soundings upon a bank on the Abyssinian shore; had 45, 30, 24, 35 and 30 fathoms, sometimes corally, other times sandy and shelly; we stood between the S. E. and E. S. E. 8 miles, then had no ground with 70 fathoms of line.

" In lat. $16^{\circ} 36'$, by reckoning $1^{\circ} 25'$ East from Jeddah we struck soundings, had 25 fathoms, rocky ground, but hauling to the eastward had no ground at 70 fathoms.

" In lat. $17^{\circ} 0'$, and $1^{\circ} 20'$ East from Jeddah had soundings, 37, 40 and 45, corally; then 33, 45, and 42 fathoms, mud.

" In lat. $16^{\circ} 44'$ North, made two small low islands on the Abyssinian shore, bearing S. W. distant 4 leagues, had soundings 30 fathoms.

" In lat. $17^{\circ} 38'$, and by reckoning 20 miles West of Gebel Tar, struck soundings on the Arabian shore, 45 fathoms, coarse sand, and soon after saw two small sandy islands; we were about 4 leagues distance from them, and saw some shoals under water; so that if you strike soundings, you ought to put about immediately.

" In lat. $17^{\circ} 57'$, distance from Gebel Tar $1^{\circ} 11'$ West, made two small islands, bearing N. E. by N. distant 10 miles.

" In lat. $18^{\circ} 0'$, distance from Gebel Tar $53'$ West, lies a low white island, with breakers off it, on the Arabian shore.

" In lat. $18^{\circ} 30'$, distance from Gebel Tar $1^{\circ} 53'$ West, saw the Abyssinian shore, distant 14 or 15 leagues, and five islands bearing from N. W. to North 4 leagues off. When you are come in lat. $20^{\circ} 30'$, and Meridian distance from Gebel Tar $1^{\circ} 35'$ West, you will see the high land of Jeddah bearing E. by N."

Consult pages 113, 114, and 115, for the periodical winds of the Red Sea.

DIRECTIONS FOR SAILING FROM THE MALABAR SIDE OF INDIA TO THE RED SEA.

1° FROM BOMBAY OR SURAT, ON THE NORTHERN PART OF THE COAST.

IN November and December a ship bound from one of those ports, being got once a little off shore, will find a fresh gale at N. E., with which steering large, she must have a speedy passage. But as it blows hard, especially westward of Socotra, and the weather is often dark and cloudy, it is best not to attempt seeing that island; but keep to the northward of it, and fall in with the coast of Arabia, near Aden, being careful to keep the lead going and a good look-out.

A ship on the same voyage, in January and February, will have much the same winds, but more moderate, and the weather very fair; it is best therefore to make for the east end of Socotra, taking care to be in its latitude, before the westing is run down 20 or 30 leagues: the land being high may be seen at 12 and 16 leagues distance, nor is there any unseen danger near it. (See page 149.) You may range all along the north side, and from the west end steer directly for Aden, heaving the lead as you draw near the coast of Arabia.

In March and April ships bound that way will have fainter and less constant N. E. winds than in the four preceding months; it frequently blows from the N. W. quarter, with fair weather and calms; the land and sea breezes, or perhaps the S. W. winds and currents, being now at the beginning near the shores of Arabia, you must, to avoid them, steer from Bombay W. S. W. and S. W. so as to pass 10 or 12 leagues to the southward of Socotra; and after getting in with Cape Guardafui, work up along the coast of Africa till past Burnt Island, and then cross over to Aden.

When a ship leaves Bombay in April, it is more necessary to keep well to the southward of Socotra, for if she cannot weather that island with a S. W. wind, she must lose her passage; but if she is unable to reach the coast of Africa she can always work along shore high enough to fetch Aden; from whence, even in June and July, she may work up to Moka, by keeping very near the shore.

The best time for this voyage is between October and March, when the southerly winds prevail; however a ship will always gain her passage by perseverance, even in May or June, the current running frequently to the northward against the winds, in those months, especially in the springs.

2° From

2° From ANJENGO, COCHIN, CALICUT, &c. on the Southern Part of the Coast.

THE navigation from these ports, and others on the Malabar Coast to the Red Sea, is at each season, much the same as from Bombay or Surat; only it is to be observed, that all ships from this coast ought to pass through the Laccadive, or Lakedivas Islands. In the months of November, December, and January, they may safely go through what part they please; but in February, March, and April, they ought not to quit the shore to the southward of 10° or 11° of latitude: this will prevent the risk of being carried among the Maldivas, by the S. S. E. current and high winds, which they certainly will then find among the Laccadive. And as a ship cannot avoid being well to the southward, when passed the Laccadive, perhaps in 9° or 8° lat. North, therefore instead of steering to the W. S. W. and S. W. she ought to steer W. N. W. or N. W. by W. to get into 11° 30' lat. North, and then West, which is the best track to steer when you leave the coast early in March; but late in that month, or early in April, that of 9° or 10° lat. North, is to be preferred, though it will not always be found practicable, the winds blowing usually from North to W. N. W. You must therefore steer close hauled, betwixt W. N. W. and S. W. as the winds will permit; then to the northward for the S. S. E. currents, rather than go too much to the southward; standing sometimes a few hours N. by W. or North, or even N. by E.; but these trips ought seldom to be made, as getting to the westward, is chiefly wanted; and you ought by no means to cross the Line, nor even go beyond 2° latitude North if you can avoid it. When a ship, late in April, or early in May, has got within 50 or 100 leagues of the coast of Africa, she will generally meet with S. W. to W. S. W. winds, that will carry her to windward of Cape Guardafui; but if she falls to leeward of Socotra in that season, her passage is lost.

DESCRIPTION OF THE COAST OF ARABIA BETWEEN ADEN AND MOREBAT.

MACULA BAY,—KISSEEN,—CAPE FARTASH,—DOFAR, &c.

Chiefly from M. D'APRÈS.

FROM the beginning of April to the end of August, the winds upon the coast of Arabia, as far as Morebat, blow from S. W. to S. S. W. varying to the West in hard squalls, and sometimes accompanied with rains; for which reason during this part of the year, working to windward along the coast is impracticable, as there is no port

Y

to

to shelter you from storms, and in many places no soundings farther than 2 leagues from shore. In September the winds blow a little fresh from the East, with strong currents to the westward, and continue so to the end of March, with frequent land and sea breezes, which are very faint from the westward, but very fresh from the opposite quarter. Hence it is that ships sailing from Moka towards the end of August, or later, and bound to the eastward, should avoid this coast, and keep more southerly in order to take advantage of the W. S. W. winds, which blow there till the middle of September: many have lost their passage, for want of attention to this observation.

The principal Bays on this coast are Macula, Kisseen, Dofar, and Morebat.

MACULA BAY, 60 leagues N. N. E. from Cape Aden, is about 3 leagues deep, and 6 broad, its land being very high: at the north-east point there is a hill a little higher than the others, under which lies a road where you are sheltered from the winds blowing between the E. N. E. and the N. W.; you anchor at a cable's length from a little rocky point where there is no danger but what is visible; 3 cable's lengths N. W. of this point there lies a reef of rocks under water upon which the sea sometimes breaks. The marks for anchoring here are the east point of the bay S. E. one league, and the westernmost point S. W. in $3\frac{1}{2}$ fathoms; as for the rest of the bay, you may anchor in 15 or 16 fathoms one league off shore; at the bottom of it a little town is seen, and on the point some fishermen's huts; fish here is in plenty and good, but water and provisions are scarce and very dear.

From Macula Bay to the Point of Shahar the coast runs E. N. E. 12 or 13 leagues; there are many villages seen along, whose inhabitants are not very sociable. From the east point of Macula you may coast it in 9 fathoms, or nearer on occasion.

SHAHAR appears a fine town situated by the sea side, and may be seen 5 or 6 leagues off, resembling several white cliffs: it is known by two hills, one to the northward, and the other to the southward; the inhabitants are civilized, and have a king who gives a kind reception to strangers. The marks for anchoring are the northernmost hill N. E. by N. and the westernmost hill West by compass, in 9 fathoms, sand and ooze. The Variation there was about 7° West in 1782.

From Shahar to Cape *Bocouas-Hova*, commonly BOGATSHUA, the course is East 15 or 16 leagues, a clear bottom without any danger, and the coast pretty high: there are from 50 to 60 fathoms 2 leagues off shore: one league from the cape you find but 12 fathoms, and as you approach, it shoals gradually.

From Cape Bogashua to Keshin or Kisseen point, the course is E. N. E. $\frac{1}{4}$ N. 31 or 32 leagues. The inland part between them is high, and may be seen at least 10 leagues off, but the coast is low, with many villages; it is also very safe, having from 30 to 40 fathoms 2 leagues from shore. KISSEEN point is a high land which may be perceived 10 or 12 leagues at sea, and is remarkable by two peaks that make like *asses ears*, with an E. by N. or E. N. E. bearing: when they bear N. by W. you may see the two

little towns of Kisseen and Durga, whose anchoring places are to the N. W. in what depth you think proper.

From Kisseen point to *CAPE Fortuash* or *FARTASH*, the course is N. E. by E. $\frac{1}{2}$ E. 22 or 23 leagues; the coast between them is low to seaward, and high within land, with some villages here and there: the soundings here run farther out, for 2 leagues off you find 37 fathoms, which shoal gradually, as you are sailing nearer shore; but at Cape Fortash, there are 40 or 50 fathoms within $\frac{1}{2}$ a league. This cape is very high, and may be seen at a distance of 20 leagues; to the northward of it the coast forms a large bay, which has good soundings, and holding ground, though no great depth is to be found but about the cape. You may anchor there, in what depth you will, but when you have passed it, you meet, as in many other parts of the coast of Arabia, where the shore is high and steep, with no convenient depth for anchoring.

From Cape Fortash to *DOFAR* the course is pretty near N. E. 40 leagues: 3 or 4 leagues before you come to it, you perceive even land. Dofar is a small town surrounded with trees, whose road is very narrow; the best anchorage is one mile off shore in 5 or 6 fathoms, the highest house in the town bearing E. N. E.

They reckon 8 leagues from Dofar to Morebat, where Christians are little beloved: at Kisseen, Europeans are better received; but most ships that lose their passage, abide at Morebat, whose bay is preferable to that of Kisseen, especially during the easterly Monsoons.

The tides are very irregular along this coast; they rise at certain times 7 or 8 feet, the currents commonly setting with the wind, except at the new and full Moons, when they run for 3 or 4 days very strong to windward, and this change is of great service to those who lose their passage.

Many navigators, who are not acquainted with this accidental difference of the winds and currents, are fearful of sailing near the shore; however, this must and may be done without danger; for the winds seldom blow strong on the shore during the easterly Monsoons.

From Cape Morebat to Cape Rosalgat the course is E. N. E. and N. E. by N. above 160 leagues, and 42 leagues S. W. by S. from the cape lies Mazeira Island. That coast is full of rocks and dangers, which are but little known; besides it is not safe to approach it because of the currents all along, which may set you on it, should you be taken in a calm. Nevertheless ships bound to the Gulf of Persia, which commonly make Cape Rosalgat, should not keep more than 15 or 16 leagues to the southward of the cape. Along this coast there are soundings about 3 leagues off shore.

CAPE ROSALGAT is the easternmost point of the coast of Arabia; its extremity is low, but within land are exceeding high mountains seen 20 leagues off at sea.

DESCRIPTION OF THE COAST OF ARABIA,

BETWEEN DOFAR AND MAZEIRA ISLAND;

By Captain JOHN S. SMITH, of the King's Ship SAN CARLOS, 1781;
With the Run from that Coast to BOMBAY.

*Remarks of Lieutenant GEORGE LEWIS,
Commander of the PRUDENCE armed Ordnance Store Ship, 1782.*

*Remarks on MAZEIRA ISLAND,
From the Journal of the ROYAL ADMIRAL, Captain DAVID SIMMONDS, 1772.*

“ ON the 25th September 1781, we sailed from Johanna with a very favourable wind; on the 5th October crossed the Line in longitude $49^{\circ} 49'$ East by account, and $47^{\circ} 49'$ by a good observation, which will appear too far to the westward at this time of the year. We met with little wind in lat. $8^{\circ} 20'$ North, longitude $56^{\circ} 51'$ by account, $54^{\circ} 51'$ by observation, and from that to calm, which lasted near 5 weeks; by which we lost the opportunity of the latter part of the S. W. Monsoon to make the coast of Malabar, expecting to meet a northerly Monsoon in lat. 17° North, which would have enabled us to make some part of the coast. But being too far to the westward, we made the coast of Arabia about POINT MOUTAVAL*, and the islands off the Bay of Curia-Muria; the current running very strong, and there being little wind, we perceived the convoy lost ground considerably daily: the Commodore accordingly ordered me in the *Manilla*, a small ship very fit for that purpose, to explore the coast and find out a place for the convoy to refresh.

“ I sailed from Moutaval Point within sometimes 2 miles, sometimes less, and sounded with 50 fathoms, no ground, till we arrived at a point 3 miles to the eastward of MOREBAT, when we got 30 fathoms at less than $\frac{1}{4}$ a mile from it. We saw several creeks along this part of the coast, but no appearance of water or refreshment till we come to Morebat, which is to be known by standing in; if you should be in the offing, for the westernmost part of a high mountain which joins Moutaval, you will not see the town till you get very close in: if you should not be able to fetch it, you must work close in shore, without the least fear, in the evening, and contrive to be in the offing about 8 or 9

* In the draught of Lieutenant *George Lewis*, Point Moutaval is called *Cape Morebat*.

o'clock in the morning for the sea breeze, which I found very regular. But if this should not be the case, you may occasionally anchor along this part of the coast towards Dofar, and take the advantage of the wind as you may find it. If you come along shore from Moutaval, you will find it near 20 leagues, from the point, which is to be known by a long low point that is the easternmost part of the bay; you may go within $\frac{1}{2}$ a mile, and stand into the bay, in what water you please, the soundings being very regular; the best anchorage is in 8 fathoms water, about one mile from the town. If the inhabitants should be shy you must wave a white flag on a staff, and they will come off; they behaved very well to us, but I don't think they are to be trusted too far; and it would be improper to risk going far from the beach, or sleeping on shore in the night.

" We found a scarcity of water, which we remedied by sinking casks near the Mosques, by which the convoy, consisting of 17 sail, were watered in 11 days and ready for sea; having got plenty of fish and some goats, sheep, and bullocks, the latter a scarce commodity, but fodder more so; the water was brackish, but we did not find it affected the health of the people: upon the whole I would recommend ships, who may be circumstanced as we were, to put into Morebat, and get water and refreshments; but if they are not in want, it will be necessary to make every advantage of the shore, as they will find I have done, by the following observations.

" We left Morebat and stood off shore, expecting the sea breeze in the morning, however we did not find it so favourable as before; still we got to the windward by standing close in shore; and though the wind was never one point to the northward, or southward of East, we worked up to Moutaval in six days with a very heavy convoy, so that there must have been a strong weather current, which I have great reason to believe is often the case.

" From Moutaval we stood over to the islands to take the advantage of the sea breeze in the afternoon, which we were successful in getting, and fetched up with the westernmost island called *Haliby*; this island is small and pretty bold to; a boat sounded between it and * *Sardy*, and found 27 fathoms about one third over, and a little farther no ground with 40 fathoms; we stood in shore from the Island *Sardy*, and in sounding found mostly 30 fathoms, and very regular soundings all over the bay of CURIA-MURIA, which we worked through in three days, taking the advantage of the sea and land winds. The passage between all the islands appears to be very good, but finding the advantage of standing in shore, I did not go through; had it been necessary, from every appearance I should have gone through between any of them without the least fear, keeping the lead going.

* *Sardy* is the westernmost island in Lieutenant *Lewis's* Draught.

" About

" About 8 leagues to the westward of CAPE CHANSELY in the bay, I spoke to a country boat from Moka, who informed me she left that place on the 4th of December, at which time she saw four East-Indiamen going into * Moka, and another ship, which I suppose was the *Content*, who had left the convoy under my command, and gone with the Indiamen, when I first left the men of war with the convoy, after returning from exploring the coast. I mention this to shew how little the East India ships are acquainted with the advantages to be gained in working along this shore.

" We saw several small coves in the bay of Curia-Muria, for ships to anchor in, but none that appear to be secure from the easterly Monsoon. In standing out, found the soundings very regular from 30 to 60 fathoms, at which time Cape *Marica* or *Matrica* bore N. $\frac{1}{2}$ E. distant 14 leagues, and Deriaby Island W. S. W. $\frac{1}{2}$ W. 4 or 5 leagues, in less than half an hour, going 3 knots, we had no ground with 120 fathoms; all the soundings we got were in fine sandy ground. The wind being at North we stood on the larboard tack in the evening; the wind being variable we tacked occasionally for two days, when we stood in shore again, and found we had gained very little; the soundings being as regular as before, we worked along shore within 2 or 3 leagues between Cape Chanseley and Cape Marica, the least water we had in shore was 29 fathoms, 4 miles off; but on standing out, with the wind at North, we got less; and as we shoaled, the ground became rocky and chalky. Cape Marica bearing N. N. W. 4 or 5 leagues, with the land open to the northward 2 points, and Cape Chanseley W. $\frac{1}{2}$ N. 6 or 7 leagues, we got 20 fathoms, chalk and rocks; half an hour after, 28 fathoms, fine sand; we stood in shore again, the wind coming from the sea; in standing in we shoaled to 21 fathoms, and then deepened to 30, about 2 miles from Cape Marica; we worked in shore the best part of the night, with very regular soundings. In the morning steering E. N. E. we shoaled to 17 fathoms, and a ship I sent to sound to the northward had 10 fathoms, Cape Marica then bearing W. by S. and the extreme land to the northward N. W. by N. after which standing off shore we gradually increased our soundings to 48 fathoms.

" We were then about 20 leagues from Cape Marica, which bore W. by S. lat. $18^{\circ} 24'$ North. We had the wind from that time to two days after, in light breezes, sometimes S. E. sometimes N. W. by N. so that we lay up N. E. with a full sail, and I expected to have cleared the land with that course, having an offing of 20 leagues, but to my surprise we shoaled our water to 16 fathoms, which happened before day-break in the morning; upon which I tacked, not seeing the land; but as soon as the day appeared we found the body of the land about 6 or 7 leagues, and the easternmost point E. N. E. We stood off about 4 miles E. by S. and deepened our water to 32 fathoms, when I stood in again, and found the soundings very regular to 3 fathoms about $\frac{1}{2}$ a mile

* These ships went to Kisseen, and not to Moka.

from

from the shore. A breeze coming off shore, we sailed E. $\frac{1}{2}$ N. all night about 10 leagues, when we observed the easternmost land in lat. $18^{\circ} 57'$ North, we were then about 2 miles W. S. W. of it. This I take to be Low * POINT from its appearance.

" We found there a strong current setting W. S. W. so that we could not weather the point with a fresh breeze at S. E. though we lay up to the windward of it several hours, being obliged to tack very often, and work very close to the shore, we got very regular soundings to 11 fathoms, above $\frac{1}{2}$ a mile from the point; and after we weathered it, we stood up along the shore, which runs almost North and South, and found the current set us about S. W. We were obliged to tack back again to wait for the convoy, several of which did not weather this point for 48 hours; during this time I worked along the shore, and found the soundings very regular, till I got off the SHOAL CLIFF, (so named from the number of shoals off it,) which bears N. $\frac{1}{2}$ W. about 10 leagues, when we found very great irregularity in the soundings; several of the ships found 8 and 6 fathoms; the *Porpoise* was in 5 fathoms, rocks, in the night, being then about 3 miles from me, and I had 27 fathoms; the next day I shoaled, from 24 fathoms to 18, 15, 12, 10, 6, 5, and 4, in less than an hour, going only two knots. I ordered all the boats to sound, who found the like irregularity in many places, so that this part of the coast may be considered as truly dangerous. When I got 4 fathoms, the island point bore N. W. 5 leagues, the Shoal Cliff W. by S. 7 leagues, and the Low Point S. S. W.

" I then stood S. E. by S. and increased the soundings very regular to 24 fathoms, about 5 miles from the spot. Here we caught a great quantity of rock cod, which is another plain indication of this part of the coast being rocky; and all the country boats we saw went without those shoals. A favourable breeze springing up, I endeavoured to make a N. E. course after standing out, till I deepened the water to 62 fathoms, at which time Low Point bore S. W. by W. and Shoal Cliff N. W. $\frac{1}{2}$ W. both distant 10 leagues.

" We made a N. E. by E. course good, and ran as near as we could judge, with a fair wind 40 leagues, when we observed the southernmost part of the Island Maziera, in lat. $20^{\circ} 18'$ North, and from the appearance of the land we judged there was another island to the northward, the northernmost part of which we found in latitude $20^{\circ} 49'$. We got soundings on either a bank or shoal from some part of the main land, from 70 to 54 fathoms, no ground to be got before or after with 200 fathoms line: they were the last soundings we got on the coast of Arabia.

" A favourable breeze coming from the southward we steered N. E. to the latitude $21^{\circ} 44'$ North, when the wind being likely to continue we steered more to the eastward, and carrying the wind southerly for seven days we made the most of it, by edging towards Bombay gradually till we got into the latitude $20^{\circ} 10'$ North, when the wind coming to the northward, I steered as near East as the wind would permit, and got soundings in lat.

* Lieutenant Lewis names this point *Cape Isolets*.

19° 40' North, 50 fathoms, which we found, by our run after, to be near 40 leagues from the land: we shoaled to 45 fathoms, after running 3 leagues, and carried those soundings 12 leagues; then got 40, after which we shoaled gradually to 24 fathoms, when we saw the land bearing E. N. E. which proved to be the Island of Tanna or Salfet, about 9 leagues."

The following remarks on MOREBAT, and CURIA-MURIA BAY were made by Lieutenant *George Lewis* in 1782.

"The low land of Morebat," says this gentleman, "I suppose to be 5 or 6 miles across, and in length about 38 miles: it is quite a flat, and I believe about 6 or 7 feet above the level of the sea. The Arabs of this low part are at continual wars with those on the high part, with whom they have no communication. The road of Morebat is good, and some poor bullocks are to be had there, also goats and a few fowls: the water is got by digging deep in the sand, but is brackish. When in Morebat Road, the westernmost land in sight bears W. by S. $\frac{1}{2}$ S. but it did not appear to me that the land is so high that way as to the eastward. Cape Morebat, called by some point Moutaval, may be seen 30 leagues, at sea, and is much higher than the South Foreland: from this cape to Cape Chanfely, and a great deal farther to the eastward, is a very high table land without a tree to be seen.—The Rocky Islands in the Gulf of Curia-Muria, are from 2 to 7 miles long. I was on shore on Halky, which is above 2 miles in length; we saw some of the islands at the distance of about 20 leagues.

"I observed the tide rises on the beach in spring tides, at Morebat 6 or 7 feet, and flows about 9 hours, or S. E. and N. W. The west Variation in 1782 was at Cape Morebat 7°, at Halaby Island 6° 3', at Cape Chanfely 6° 2'."

We shall conclude this description of the Arabian coast, with the extract of a journal of the *Royal Admiral* when she went between Mazeira Island and the main in 1772.

August 16th at noon they observed in lat. 20° North, and had made 49° 16' West, from Prince's Island, in the straits of Sunda; they found the water discoloured, but had no ground at 70 fathoms.

On the 17th in the evening, had soundings and stood off to the eastward; but finding the water shoalen fast, it was thought best to anchor till day-light; found a current setting to the northward; in the morning it was thick weather, but they weighed and endeavoured to work out, the wind blowing fresh from South, and S. S. W. finding they shoaled their water, on each tack anchored until clear weather.

On the 18th at 4 P. M. on its clearing up, they weighed in order to find a passage between the island Mazeira and the main, or a place of safety. They steered to the northward, N. N. E.—North, and N. by W. sounding 6 or 7 fathoms for some time, then shoaled from 7 to 4 $\frac{1}{2}$ gradually: then steered N. E.—E. N. E. and East, came into 3 fathoms and anchored. Saw MAZEIRA ISLAND bearing from E. S. E. to South, distant 2 $\frac{1}{2}$ or 3 leagues; the water fell 2 feet, and the ship struck. At 8 P. M. they found the

water

water rise again, which makes the time of high water 10 h. 48 m. at the full and change of the Moon; the water rises 5 feet.

On the 19th they went and sounded in a boat; and N. W. by W. $1\frac{1}{2}$ mile from the ship, had 4 fathoms water, on which they weighed to anchor in that place; the variation was observed to be $5^{\circ} 56'$ West. On the 20th at 4 P. M. a boat from the island went on board her with a pilot, and agreed to conduct them through between the island and the main: the boat went and sounded to the eastward; between the island and the ship had from 4 to 3 fathoms, then deepened gradually to 4, 5, 6 and 7; sounded to the westward, and had $4\frac{1}{2}$ fathoms, at 2 miles distance from the ship.

On the 21st, at $\frac{1}{2}$ past noon, they weighed and stood S. E. by E. towards the island; soundings 4, 4, $3\frac{1}{2}$, 3, 3, $3\frac{1}{2}$, $3\frac{1}{2}$, 4, and deepen gradually to 6 fathoms; then bore away East—E. N. E. and N. E. keeping in 6, and $5\frac{1}{2}$ till near Mazeira Island, where they anchored in 5 fathoms, soft sand and shells, abreast of the town; the island bearing from N. E. by E. to S. W. by S. distance off shore 2 miles; latitude by observation $20^{\circ} 32'$ North, and variation $5^{\circ} 36'$ West.

On the 26th at 2 P. M. they weighed, and steered to the North and eastward, along the island from N. N. E. to N. E. in 5, $5\frac{1}{2}$, and $5\frac{3}{4}$ fathoms. At 3 they came up with a large sand bank above water bearing N. W. which forms the channel; they entered this channel, keeping the bank at a distance of $\frac{1}{2}$ a mile, the island at 3 miles, and the main about 2 miles.

In this channel they had from $4\frac{1}{2}$ to $4\frac{3}{4}$, and a cast or two of 6 fathoms; when Mazeira Island bore from S. W. to N. E. $\frac{1}{2}$ E. distant $1\frac{1}{2}$ or 2 miles, they anchored in 4 fathoms water to sound to the eastward, and westward of the ship, but found no less than 3 fathoms. At 8 weighed and steered along shore from N. by W. to N. E. occasionally from 5 to 7 fathoms, at times $3\frac{1}{2}$. At 11 anchored in $4\frac{1}{2}$ fathoms water, being then through the passage. The north end of the island bore from S. $\frac{1}{2}$ W. to W. S. W. distant 3 miles, latitude observed $20^{\circ} 48'$ North; had no less than $\frac{1}{2}$ less 3 fathoms in going through, and that at low water.

THE EASTERN COAST OF ARABIA,

FROM CAPE ROSALGAT TO MUSCAT;

With the Coast of PERSIA and SINDI, and their Description, from the Remarks made by Lieutenant JOHN PORTER, who commanded the DOLPHIN Brig, on these Coasts.

CAPE ROSALGAT*, or *Rosalgate* and *Russelgate*, according to the common pronunciation, lies in $22^{\circ} 38'$ lat. North, according to several observations; but the longitude of this easternmost point of Arabia is far from being determined with the same precision. M. D'Après places it in $60^{\circ} 10'$ East of London, and M. Dalrymple in $61^{\circ} 10'$, or a degree farther to the eastward, adding however that an implicit confidence must not be placed in that position.

From Cape Rosalgat to Muscat, the course is to the N. W. above 40 leagues; thence to Cape Jask on the coast of Persia, the course is also N. W. about 57 leagues. The coast then extends to the eastward during 160 leagues, and as far as Cape Monze, where the Coast of Sind begins; there it turns to E. S. E. and continues in this direction for about 80 leagues, 40 of which are taken up by the mouths of the river Sind or Indus, on whose easternmost branch lies the port called Bunder Lahery, or Larry Bunder. Lieutenant Porter, whose remarks we are going to abridge, began his survey at this latter part of the coast, and proceeded to the westward as far as Cape Rosalgat.

The land about SIND, or *Sindy*, is very low, covered with shrubs, and not to be seen above 5 or 6 miles off; it continues so without any thing remarkable, till within 3 or 4 miles of the mouth of *Larry Bunder River*, and then it terminates in sand, the extreme point only excepted, on which are several tufts of bushes and some bamboes stuck up with white flags on them, which are to be seen before the land: the soundings all along are regular, with mud bottom; the tide was found to set W. N. W. and E. S. E. 5 fathoms per hour.

From the mouth of Larry Bunder River is to be seen a part of the high land over Crotchey (Crochey); there is nothing remarkable between the two places; the land by the water side is low, interspersed with shrubs; but up the country there are several hummocks of a moderate height.

CROTCHAY, whose land has a whitish appearance, is easily known by several islands to the northward, and by a white tomb built on a promontory, which at a distance appears

* The Arabs call this cape RAZ-AL-MAD, and pronounce it *Raz-al-gbad*.

like an island: the entrance into the bay is between the promontory and the largest island; but in case of necessity a small vessel may pass, or anchor between any of the islands; the bottom is sandy, as it is all over the bay. The town of Crotchey is situated 5 or 6 miles above the anchorage, and about a mile from the side of a creek which can admit only small boats. This town carry on a great trade; they import from the country a great quantity of cotton raw and spun, which is exported to the Malabar coast, Arabia, &c. Likewise almonds, raisins, dates, grain, ghee, oil and hides, and some piece-goods: they carry up in return sugar, rice, pepper, &c. The water, which is not very good, is very dear on account of its distance from the harbour. Black cattle and goats are to be had, but dearer than on the Sind coast. The people are very civil, and would not take any custom from the Company's vessel. The land at the back of Crotchey is pretty high, and extends so to CAPE MONZE, which is of a moderate height, but the land next the sea runs so low as not to be seen except close in shore.

The ISLAND OF CHILNEY appears of a whitish colour, and there are good soundings between it and the main; when round the cape the land forms a kind of bay, and is, as in all other parts of the coast, very high in the country, and extremely low by the sea side, with very regular soundings, chiefly mud. There is, about 10 miles from the cape in shore, a rock above water near as high and as big as the Oyfter Rock at Bombay, having 3 or 4 fathoms all round and close to it; and in turning it up the coast, you may venture to stand pretty close in, keeping the lead going, till you approach Sommeany, at which place the bar runs out a long way, and is dry in some places at low water. All along the coast from Cape Monze to Sommeany there are immense quantities of wood and timber, which is washed up in the S. W. Monsoons, especially in that hollow or bight running in from the cape, but as there is a large surf it would be difficult to bring off any part of that timber.

SOMMEANY is a small town, at the entrance of a river, with an old mud fort in ruins: the houses are very small, and nothing more than mats and sticks; every thing is very scarce there, even the water, which is got in this manner; they pick out some place near the town, which appears to have been a swamp, and therein they dig a hole 5 or 6 feet deep, and as much in diameter; if the water oozes through the land, which does not always happen, it serves them that day and perhaps the next, when it turns quite brackish, owing to the nitrous quality of the earth. The town is scarcely discernible from the road; the best mark for finding it, is a remarkable gap in the high land at the back of it, which in clear weather cannot escape notice; when it bears N. N. E. $\frac{1}{4}$ E. the river's mouth is bearing N. E. by E. distant about 2 miles, in $\frac{1}{4}$ less 4 fathoms.

The coast from this place runs along extremely low, but the back land is very cragged, and continues so to Cudjerah: there is a remarkable white land, in a kind of valley between Arrah and Cudjerah, which being very high, must serve as a mark for this part.

CUDJERAH at first appears to run out to a low point, but terminates in a bluff with *Cape Muran* (Moran); after running 5 or 6 miles from it to westward, you see the rocks of *Kingalab*, which appear, unless very close in, to be out in the sea; though they stand on the edge of a low sandy point; the shore is very bold all along, but the bank does not run off above 12 miles, and then deepens all at once, from 25 or 30 fathoms, to no ground. In advancing near *Cape Muran* you descry

CAPE ARUBAH (Arabak), which appears like an island, and the contrary is not perceived before you are in at the bottom of the bay, which is pretty deep, and its land very remarkable. There is a small bay on the west side of the cape, but so shallow as not to afford any shelter to vessels: the land is very craggy for 7 or 8 miles to the westward, from whence you see

THE ISLAND OF ASHTOLA (Astola), which at first rising out of the water, appears very long and even at the top; it is of a moderate height, and 2 or 3 miles long. There are very good soundings all the way between the island and the main, but on the south side you meet with foul ground and overfalls for 12 miles: on the north side you find two or three small sandy bays, into which great quantities of turtle resort. Notice must be taken that on the south side a rock is seen, which at a distance appears like a sail, but on a nearer approach with the help of a little imagination might be taken for a camel lying down*. There is a river on the main a little to the eastward, but the bar at the entrance is so shallow as not to admit a small boat. The land all along is very craggy, and has nothing remarkable till you come to

CAPE POSMEE, or *Pofmy*, which appears like the top of an old barn in coming from the eastward: it forms a small bay, on which stands the village, chiefly inhabited by fishermen, who are very civil to strangers; water is procured here in the same manner as at Sommean, and you may buy a few goats, which are very lean and very dear.

After leaving *Cape Posmee*, you meet with the bluff point of SHIED, which shews like an island, and is the extreme to the westward; the high land of *Duran* appearing at the same time like another island, to the northward of it: the sea coast is so very low between these two headlands, that even on a nearer approach it has the appearance of a deep bay: from *Shied* to *Guadel* the soundings are very regular: *Muddy Peak*, which makes one of the extremes of the bay, is very high, of a white colour, and very remarkable; as it can be seen at a great distance, it is always a sure mark for

CAPE GUADEL (*Guardell*), which is not of a great height. *Guadel Bay* is pretty deep, but has shallow water, except towards the entrance, where you find 12 or 13 fathoms, with a decrease not very regular as you go up; the bottom is chiefly sand, and no danger. The town is situated close under the north side of the cape, which is a peninsula joined with the main by a neck of land not half a mile over; from one bay to the other there was an old wall with towers, whose remains are to be seen, and likewise

* This rock is called in the old Portuguese Charts *Ilha da Camela*, or *Camel's Island*.

those of a town built with stone, and some wells; but the inhabitants, who are few, live in mat houses: the greatest part of them are weavers, who manufacture dark checks very narrow, and some plain carpets of different colours, but not rough. Water is got here in the same manner as at the places before mentioned, as they have found the water is not so good in wells built on purpose; you can have likewise some few goats, sheep, and fowls. From Crotchey to this place the people call themselves *Blackees*, and from this place to Jask they take the name of *Brodiés*; there is some difference in their language, and perhaps in their religion, though none could be observed in their dress or manners.

When clear of Guadel Bay, a current was found setting to the eastward: there is a small bay to the West, which affords very little shelter; from this to Vouch Bay the land is of a middling height near the sea, but the back land is extremely remarkable by its ruggedness; the soundings all along are regular, with mud bottom, and pretty bold.

From Vouch Bay you come to Noa Point; when abreast of this point the land on the other side of the bay is not to be seen; only a hummock or two, which look like islands. The land at the bottom of the bay, where there is a small town inhabited by fishermen, being very low and covered with shrubs, is not descried till within 3 or 4 miles; and then the bushes are seen first: the bay, though very large and deep, has very shoal water. In crossing right over from Noa point, you first see a small lump standing on the high land, on the opposite shore, and nearly under that high land there is an island which cannot be distinguished unless you are very close in; this lies at the mouth of a small bay called by the natives *Bucker Bunder*, where they go to fish. After rounding the point of the bay, you perceive some very high craggy land, and to the westward of it a remarkable roundish hill, from which to Chewabad you must keep close in shore, the bank running but a very little way out; and the current set at the time Lieutenant *Porter* was there (in the beginning of January) two knots to the eastward; therefore by standing off, if it should be calm, as it is generally between the land and sea winds, you must unavoidably drive back to the eastward again; the current runs much stronger out than in shore: in keeping along shore you have equal soundings, though very deep, and the bottom, for the most part, sand or ooze. The land is of a moderate height from the forementioned hills till you come to the low point making.

CHEWABAD BAY; it then runs very low, and over it you perceive a white tomb and some trees, which are seen before the town of *Chewabad* or *Charhar* *; in going in you must give the low point a good birth, as there are rocks running out from it; but you may borrow as close as you please to high point, which has deep water close in.

* This is a modern town which has replaced the town of *Tearfa* on the same bay where the Portuguese formerly had a settlement, of which there are still some remains; the principal man told Mr. *Porter*, he should be very happy if the English would take possession of *Tearfa*. All this land is dry, barren, and unfruitful; at that time no rain had fallen for six years, which produced a famine, that made half the people desert the country.

You see there a small mud fort, but no cannon, and this town, which is the best on the coast, is composed only of straggling mat-houses. There is about one hundred Banyans settled in the place, who have a small Buzzar, and many weavers, like those at Guadel. The water is very good, and easily procured, being very near the water side. Goats and sheep are to be had at a moderate price, but neither bullocks or fowls can be got; they have also very fine horses and a few camels; some small gardens produce vegetables of several kinds, such as turnips, onions, potatoes, carrots, benjalls, &c.

Chewabad Bay is very small, and the water on a sandy bottom decreases there gradually as you go up, the tide rising and falling a fathom on the springs: it lies at the entrance of a larger bay, very shallow, but with even ground; the low point of Chewabad makes one point of the bay, and the head land, called Colab, or Tisme, or Tiiz, makes the other; between Tearfa and Colab, the land is very low and covered with shrubs.

COLAB affords good shelter from the westerly winds, which sometimes blow very strong: thence the westernmost extreme is GODEIM, a headland level at the top, with very steep cliffs towards the sea, and at first appearing like an island, the declivity on each side being very low. The land from Colab runs along of a moderate height, till it terminates in a remarkable bluff, between which and Godeim is a small bay too shallow for vessels to go in: the land around is very low, but at the back of it there are some craggy hills and pretty high. From Godeim you perceive a remarkable spot of land called *Coelat*, near which to the eastward is a small river named *Tanka*, with about 2 fathoms at the entrance, at low water, but the soundings are very irregular and mostly hard sand; about 3 miles up are the ruins of an old Portuguese fort with Buzzars, wells, &c.

Between this place and Muckfa the land has nothing particular in its appearance, it seems only to become more fruitful, the valleys being planted with date trees. MUCKSA (Muxon) from its form must have been taken for Cape Jask very often; it runs out to a low point, at whose extremity is a little mud tower, which is inhabited by some Fackcers: they with a few other wretched people live in this desolate place on the shell fish they pick at low water, without any other grain or dates, except at the time of the year they are in season. Bombareck may be seen from this place, though not to be distinguished very plain to be such: the land between it and Cape Jask is very low by the sea side, but very high inland.

At the extreme point of CAPE JASK is a river that appears so very full of banks and shoals as not to be entered, even by a boat*; its points are very low, and indeed not higher.

* *Cape Jask, or Jasques*, is thus described by *Thornton*.

" The Cape itself is a low sandy point whereon standeth a white square cliff, like a tomb, standing in the sea, but the cliff is not seen as you ride in the road.

" In this bay there is very fair soundings all over, the ground soft and oozy, except it be near the shore or the eastern point. To the northward of this point, about 5 miles, there is a small river, whereinto a small ship,

higher than a sand bank; and as the shore itself is very bold; you might be close in, if the weather is thick, before you could see the low land. BOMBARECK is not in the sea as some people have imagined, but is very near the beach, and has a small hole on one side: the land to the northward of it is of a moderate height, and the Arabian coast is plainly seen from this shore.

After leaving Bombareck, and running to the eastward enough to make 44 miles on a Rhumb, Lieutenant *Porter* steered due South for the Arabian coast, and made the land just to the northward of Muscat Island. As the land over Muscat is of a prodigious height, you see it a long time before you can judge with any certainty, till you are close in, whether you be to the westward or eastward of Muscat, but by knowing Cape Coriat.

MUSCAT ISLAND generally appears yellowish, as well as some round hummocks at the back of it; you descry also some white sandy beaches and the rocks very black and craggy, which form the harbour: but I would advise all ships bound to Muscat to stand close in shore, by which means they can always be sure of knowing the land, or have an opportunity of anchoring, if it falls calm; for the current, which generally runs as the wind blows, is for the most part very strong in the time of the North-westers; and vessels by keeping out may run the risk of being driven a long way to leeward; then it would be no easy matter to fetch up again, as there is no anchoring ground in many places, and even when you find one it is too close to venture with a large ship. There is no ground close to the outer side of Muscat Island, yet within it the ground is very good, chiefly sand or ooze, as well as along that shore above Muscat, though very deep water. From Muscat the easternmost Swady bears N. W. by W. distant 20 miles, the body of the Swady Islands running East and West, with a very good passage between them.

The town of MUSCAT is walled round, and none but Arabs and Banyans, or Christians, are permitted to live within the gates; the fugitive Persians, Blochees, &c. of which there is a great number, live without the gates in mat-houses. The entrance of the harbour is defended by two forts, and no vessels are allowed to go in after dusk, or to come out without a pass. Though the rocks about Muscat have the most barren appearance, you find there very fine beef and mutton, and plenty of vegetables and fruits of most kinds. The water, which is the dearest article for shipping, is conveyed from above a mile without the gates to the sea side, through a small channel made with Chinnam and stones, to a reservoir, from which it is let out by a leather hose into the boat, which may

ship, that draweth not more than 10 or 12 feet water, may go, and ride as safe as in a dock, where he may have 4 fathoms and $\frac{1}{2}$ at low water, and ride land-locked, and also lay her side to the shore; there is upon the bar of this river at low water but 5 foot, it does rise 7 foot $\frac{1}{2}$, or 8 foot upon the best of the spring, it floweth N. E. and S. W."

haul

haul close under. Fish is there very cheap and in great variety and plenty; they bruise it in water with dates and a kind of earth, which mixture is the common food of their cattle, and is extremely fattening.

There are two large forts on each side Muscat, which not only command the harbour, but the town also; one of them defends a small bay or bight, which is formed by those rocks that make Muscat harbour; there is a passage between them into the harbour, but it has not above one fathom at high water: a vessel that cannot weather the rocks which make the harbour, as it is sometimes very difficult in the North-westers, may run in the bight without any fear of danger, and find good anchoring ground, though very close in*. A town called *Cittab* may be seen a long way off to the eastward, on a small cove of this bight, in which you anchor in 10 or 12 fathoms as you choose, the bottom fine sand, and the water as smooth as in a pond, let it blow ever so hard from the N. W. As Muscat is only 2 miles by land from this place, you may send there and be supplied with every thing you want. It seems strange that though all the rocks about this place are lime stone, and that "the lime works out of the rocks itself without the help of fire," there is very little use made of it, and the large houses in the town are built with mud, instead of Chinnam.

There is another town to the westward called *Matrah* (Muttro), and defended by a small fort, which is nearly as big as Muscat, and about 3 miles from it, with several fishermen's villages in the valleys between the two. At Matrah there is a very good "hard" to haul vessels on, and though they have one at Muscat, yet they always send their largest vessels to the latter place to be cleaned. From Matrah you find a very good road along shore, and a number of little villages here and there all the way: the low land is well cultivated, but the high land at the back is quite barren and of a reddish colour, resembling the rust of iron; a number of cascades are falling there whose waters come out burning hot; it is like other water in taste and colour, the inhabitants drink no other, and their gardens, which are very fruitful, are watered with it. They have several hot-baths hereabout, and what may be reckoned strange is, that in some of these hot-baths there are great number of little fishes, about the size of what they call tittlebats in England, which are full of fins, and very prettily spotted, but so very nimble that I could not catch one;

* Mr. John Wase, 3d mate of the *Royal Captain* in 1762, has communicated to us the following observations on Muscat Bay, its harbour, and the adjacent coast.

"The Arabian Coast is very high land all the way from Muscat up to Cape Musfeldom: between these two places, and for 2 or 3 days before we made Cape Curiat (in March), the sea was entirely covered with fish spawn.

"We anchored in the bay, in $\frac{1}{2}$ less 10 fathoms, grey sand and mud; Isle Muscat N. W. $\frac{1}{2}$ W. body of the town S. by E. $\frac{1}{2}$ E. about 2 miles.

"In the harbour we were in 14 $\frac{1}{2}$ fathoms, gravel and shells; Isle Muscat N. W. $\frac{1}{2}$ W. extremity of the harbour S. E. $\frac{1}{2}$ N. to W. by N. $\frac{1}{2}$ N. the rock of the east extreme E. by N. $\frac{1}{2}$ N. Muscat town S. S. E. 2 miles; Matrah town West."

the country people are so superstitious, as to believe whoever catches one will meet with instant death.

After leaving the town of Cittab, and keeping along shore, no ground was found with 40 fathoms line, till *Cape Coliat* (Coriate). The bank there, which is chiefly sand, does not run above 2 or 3 miles from the shore, and shoals gradually from 30 to 25 fathoms all the way in. Besides the high land which distinguishes this place, it may be easily known by a large range of date trees, some houses, with a small mud fort to be seen over them, and a rock pretty high out of the water, close in shore: there are soundings almost all the way to Cape Rosalgat.

TEWEY, or Tewee, is just under the high land of Kalhat, which is not a cape, and between two ridges of rocks; no soundings are to be got within pistol shot of the shore, with 40 fathoms line*. Boats came off, and the people said there was good water, which they would bring off if desired: there are several small villages all the way along shore, but no river or creek; and boats with fish will come on board any European vessel that is passing that way. After leaving the high land of Coliat you see a long spot of land, of a moderate height; it extends to the eastward like a point, and under it you perceive a great number of fishing huts which appear like several towns together. From this place the natives reckon above six hours to a large city called *Zoare* or *Zore*, in which is a good Buzzar with a number of Banyans who carry on a great trade. The *Fox's* boat, who went on shore at the fishing town, found the people rather impertinent; it does not belong to Muscat, but is under a different government, and the people are not called Arabs, but Buddues†. You have soundings close in shore from this place to Rosalgat, which is not above 3 or 4 leagues distant, and in the way there are several small creeks: the river or creek which goes up to Rosalgat town, is about half a mile wide at the entrance, and opens in a kind of small bay wherein there is shelter for small vessels, but it is not safe to venture on shore, as the inhabitants are of a treacherous disposition. The bank does not run a mile from the coast, but shoals very regular and has $3\frac{1}{2}$ fathoms water, close to the low sandy point.

This low sandy point makes CAPE ROSALGAT; the houses appearing over the sand bank, seem to be very well built with mud, and many of them have terraces, likewise a small *cotta* or place of defence, to retire to in case of an assault. I should think it best to make the land rather to the northward, in coming over from India in the months of April or May; for if you meet with southerly winds, they generally come round to the eastward,

* This must refer to a particular spot only; as will be seen hereafter in Lieutenant *McCluer's* description.

† The word *Budduet*, *Baduit*, or *Bedouins*, according to the different pronunciations, means the Arabs who live in the desert; and probably some of their wandering tribes keep the town of Zoare in subjection; but according to Lieutenant *McCluer* the government of Muscat extends to Cape Rosalgat.

and sometimes blow hard from that quarter; the extreme point of Rofalgat is so low as not to be seen till close in with it, and as the currents, at that time of the year, are reckoned to set to the westward, you might be driven unexpectedly to the land; whereas in making it a little to the northward you have the Gulf open.

THE GULF OF PERSIA.

INSTRUCTIONS FOR SAILING BETWEEN INDIA AND THE GULF OF PERSIA,

Extracted from the Nautical Memoirs of Lieutenant JOHN M'CLUER.

THERE are only four months in the N. E. Monsoon which are favourable for the passage from the Malabar Coast to Muscat; viz. November, December, January, and February, during which ships have been sometimes only 8 or 9 days from Cape Comorin to Bombay. Any vessel bound to Muscat ought then to work up the Malabar Coast to the high land of St. John, then stretch off, keeping to the northward all the wind will permit: in striking soundings on the Guzurat Coast, 35 fathoms will be a good way off, and before you get 11° to the westward of Bombay, you must raise to 24° or $23^{\circ} 50'$ if the wind permits, for it hangs much to the northward even in those months: sometimes when you open the Gulf of Cutch, it will blow strong at East, and E. S. E. which is accompanied by dark cloudy weather. When the wind is northerly it comes with a clear serene sky; when N. E. beware of sudden squalls, which give very little warning; their strength is only known by the motion of a small cloud, which comes very swift when those squalls follow it.

By running down the westing in the latitude of 24° you will have a fresh wind, that will probably continue till you open the middle of the Persian Gulf, which often sends out a strong North wester, and by being to the northward of your port, you may bear up, and fetch Muscat with a flowing sheet. Ten or twelve days, make the usual passage from Bombay in those months.

Many vessels will shape a direct course from Bombay to Muscat; but the wind being well to the northward they fall in with the land about Cape Rofalgat, and if they get in shore

shore they are sure of being becalmed for many days; some have been fifteen days, in working from Cape Coriat (Coliat) to Muscat, though the distance is not above 11 leagues. In the above said months never come nearer the land than 5 leagues.

March, April and May are the months in which a STRAIT COURSE is to be made, if you can: but within 6° or 7° of the Malabar Coast, the wind hangs well to the westward, therefore a vessel must stand away to the southward to 10° or 12° North latitude, to fall in with a southerly wind, which sets in sooner to the southward than off Bombay. But off Cape Rosalga in these months the southerly winds are certain, even in March and April, but stronger in May; and after you have doubled the cape you will find regular land and sea breezes, unless they are obstructed by a strong North-wester from the Persian Gulf, which is certain once or twice a month. In these months you may venture within 6 or 7 miles of the shore. Twenty days are reckoned a good passage from Bombay.

From any part of the Malabar Coast during these months, you should stand off to the westward, till you get the southerly winds, as it would answer no end to work up the coast at this time that the land winds are over.

In the two months of September and October, the passage is very tedious; it being the change of the Monsoons the winds are variable all the way over, till within a few degrees of Bombay; then you have a fresh North-wester and a hollow ground swell. In these months you ought to work up to the latitude of 20° North, then stand off, and fetch the land about Cape Rosalga. Do not go to the southward of Bombay; but as you find the wind to vary, make all the westing possible till in sight of the Arabian shore, where the winds are quite variable in those months. *N. B.* These are the worst months in the year for this passage; you are carried entirely by chance.

THE SOUTHERN PASSAGE to Muscat and the Gulf of Persia is often made by the Company's cruizers: it is a track of near 1500 leagues, which they are obliged to run down to gain 260, the distance from Bombay to Cape Rosalga.

June, July, and August, are the months for this passage: you stand down from Bombay to the Malabar coast in 35 or 40 fathoms, never exceeding that depth, or coming under 20 fathoms while on the coast. Before you get the fourth parallel to the southward of the Equinoctial line, you will make 6° or 7° easting from Bombay, which cannot be avoided, on account of the direction of the Lackdivas, and of the S. W. winds, which at all times blow very hard.

In June and July, vessels have been known to fall in with the S. E. trade, in 3° and 4° south latitude, which has carried them to the westward in those parallels; but in August the S. E. trade draws southward, so that $8^{\circ} 30'$, and 9° South, are the proper track; and even in the earlier months if you should find it to vary, either in strength or direction, you never ought to persevere in the short route.

"In $8^{\circ}\frac{1}{2}$, or 9° latitude South, I have always found," says Mr. *McCluer*, "the steady trade wind, and a clear sky; whereas in 4° , or $4^{\circ} 30'$ lat. South, you will have several squalls and rain." Having run down the southing, the next thing to be considered is the westing: while you are in the way of the S. E. trade, get into 7° , or $7^{\circ} 30'$ variation, before you come to the northward of the Line, for after you have passed it you can never expect to gain any westing, as the wind from the Line northward is at W. by S. or W. by N. with a heavy swell from the West; this being the case a vessel must be a good one even to make her way good North.

It would be proper to go far enough to the westward as to make the Isle of Socotra, at 10 or 12 leagues distance, which is $18^{\circ} 30'$ meridian distance from Bombay, and near 8° variation: from this island to Rofalgat the course will be near N. E. by N. then you may cross the parallel of Mazeira Island without the smallest risk; and when by the latitude you are past that danger, haul in, what the wind will permit, for the land. You are certain of a strong easterly current in those months from the Line to Cape Rofalgat. "I have been," says the Lieutenant, " 4° to the eastward of our reckoning in a run from Aden to Pigeon's island, on the Malabar coast."

When vessels come from the Bay of Bengal, or the Island of Sumatra, bound to Muscat, it is requisite they should have a fresh departure before they make the Arabian shore, otherwise the variation is their only guide for this passage; but sometimes it cannot be exactly observed.

A general guide is to make sure of your westing before you come to the northward of the line; always exceed 7° variation for that coast; when bound to Bombay that westing is not required.

In the month of August, one should never attempt to go the short rout, or the 4° south latitude passage, but always run down the westing in $8^{\circ} 30'$, or 9° lat. South: there you will be certain of the true S. E. trade wind with a clear sky, that seldom leaves you, till it carries you to the S. W. Monsoon, which will be in 6° or 7° variation.

On making the land about Cape * Rofalgat, the wind that blows fresh at S. W. to the southward of the Cape, will change gradually to S. E. as you round that headland; after you shut it in, or bring it to bear South, the S. W. Monsoon is entirely lost, and you seldom have more than light variable winds to Muscat; once or twice a month you may meet with a fresh South-easter, which will only last a few days.

* The country people say there is a rock even with the water's edge, due East of Rofalgat, 4° distance. Mr. *McCluer* adds, "I have been in vessels that have gone in that parallel of latitude, but could never see any thing but turtle; the last voyage I made, we struck a turtle in $21^{\circ} 31'$ North, which made us think we were nearer the land than we really were; for, after that we made just 4° West to the high land of Colliatta."

The land behind Cape Rosalgat is very high, and may be seen in clear weather 20 leagues off; Point Coliat or Calhat, W. N. W. of Rosalgat, is likewise very high.

From Calhat to Cape Coriat is a deep bay; and from the pitch of the latter to Tewee, which is 5 or 6 leagues to the southward, there are regular soundings, and good anchoring ground in 14 fathoms 2 miles off shore; where you lie sheltered from the North-wester; in this bay there is an island much smaller than that of Muscat.

CAPE CORIAT, in lat. $23^{\circ} 25'$ North, may be easily known by a remarkable gap in the back-land, the like of which is not on any part of the coast, and which is shut in when the cape bears South; this notch is called the *Devil's Gap* by the seamen, probably on account of some infernal blasts that come from it in the months of January, February, and March, and which will lay a vessel on her beam-ends, if not prepared against them; but they generally give sufficient warning. This notch may be placed in lat. $23^{\circ} 20'$ North, and 11 leagues S. W. by S. from Muscat: it is a very good mark for a ship who falls in with the land to the southward of Muscat.

MUSCAT COVE lies in lat. $23^{\circ} 38'$ North, and $13^{\circ} 20'$ meridian distance West from Bombay, by the medium of many good accounts: there is no danger about its entrance, but what is in sight, but you have no anchoring ground till within $\frac{1}{2}$ a mile of the rocks. When the wind is southerly it will be troublesome to get into the cove, for as you approach the shore sudden gusts come through the rocks that vary many points: if you are under 15 fathoms come to an anchor, but if above that, you ought to make a small tack again, or stand into *Matrah Bay*, where there is good anchoring ground in 10 fathoms; then with the land-wind in the morning, which seldom fails, you can weigh and stand into Muscat; though at Matrah you can be supplied with provisions the same as at Muscat.

The northerly wind is fair to stand into Muscat Cove, but it blows, when from that point, so as to start their anchors in the cove. The ground is sandy within and without the cove, but very bad holding ground: it is best to go in, if your stay should be only 24 hours, as lying out is dangerous.

From Muscat to BURKA, a place remarkable by its trees, and where the Immaun resides, the coast is near W. by N. and E. by S. 50 miles in length, and quite clear; about 3 miles off shore lies the anchoring ground in 5, 6, or 7 fathoms. SWARDY ISLANDS, the easternmost of which is 10 leagues from Muscat, lie near East and West of each other, extending about 7 leagues, and in 4 ranges, between any of which a vessel may work in from 5 to 16 fathoms; the westernmost is the most remarkable, and lies nearer the shore than any other. The *Damaffetta Rocks* lie N. 70° W. from Muscat Cove, distant 4 or 5 leagues.

CAPE JASK from Muscat bears N. N. W. by compass, but the course steered from the latter place to the entrance of the Gulf of Persia, is N. W. by W. which will bring a vessel within Cape Jask, 3 or 4 leagues, if the current does not run strong to the eastward

eastward of westward. If the southerly wind should prevail, keep mid-channel, or from 3 to 4 leagues off Bombareck; this bearing East, steer N. N. W. for the Quoins; but with light turning winds, keep the Persian shore on board: never go out of anchoring ground, which you have 4 or 5 leagues off to 3 or 4 miles from shore. In the middle of the entrance, that is the GULF OF ORMUS, there are 60 and 70 fathoms, and as you approach the Arabian shore, the water will deepen to 90 and 100. Between 40 and 10 fathoms is a good depth to work in. All along the Persian shore, from Cape Jask to Bombareck 4 miles to the northward of Jask, you have 30 fathoms, 3 or 4 miles off the shore, with shoals, from 30 to 5, in two miles run; but higher up in the entrance, you may run 10 miles between 30 and 10 fathoms*.

From Cape Bombareck to the Quoins the course is W. N. W. or N. W. by W. To keep a good distance from them, you ought never to come nearer them than 8 miles; by so doing you can anchor in 30 or 35 fathoms, if it falls calm; whereas in keeping near them, you have the water deeper and the current stronger.

In coming up with a fresh southerly gale, you pass Cape Jask 3 or 4 leagues, and then steer N. N. W. 18 or 20 leagues for the Quoins.

THE WINDS AND CURRENTS IN THE GULF OF PERSIA.

IN this Gulf the North-westerns are the prevailing winds all the year round; November, December, and January, being the only months in which you can depend upon having southerly winds; what you have at any other time is mere chance; and when they blow fresh, for 2 or 3 days, you are always certain of a North-wester with a double violence. In those months a ship has been running up with a southerly wind, studding sails on both sides, when the North-wester has taken her aback, and to such a degree as to bring her under her fore-sail, and close reef main-top-sail, forcing her to look for shelter under the lee of the nearest island, for it is in vain to attempt working against it. These North-westerns seldom exceed 5 days, oftener 2 and 3 days; when they abate, it either changes to the southward, or to light land winds.

The northerly wind is named by the Arabs *Baw Shau Maul*; it blows once a year for 40 days, without intermission; this they call the Great Shau Maul, which happens in June and July. It is needless for a vessel to attempt to work up during this time;

* We must observe here, that in the entrance of the Gulf of Persia, there is a SAND on which a Moor's ship struck; it is reported in the journal of the *Nathaniel*, Captain *Benjamin Dennis*, "to bear S. E. by S. from the Island Bombarrack, off Cape Jafques, 21 leagues; distant from the coast of Persia nearest land, 35 leagues."

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though our ships have been known to turn up the river, under their courses, while these winds were blowing.

There is likewise a smaller Shaumaul which blows in March and April, sometimes 20 days, without the least variation in strength, or point. When these winds set in, after the 4th or 5th day, the current will run strong against the wind, so that a vessel will gain 20 miles a day; under close reef-top-sails and courses.

"I am not well enough acquainted with the nature of the current to account," says the experienced officer to whom we owe this remark, "for such an effect, but I should think that the water impelled by a strong gale blowing constantly one way, and forced through such a narrow gut as the Gulf of Ormus, meets there with the resistance of an open sea, and after rising to a certain height, must recoil back against the wind. I have known by experience, after a strong North-wester has blown for three days, that after falling calm, the current has run one knot *per* hour to the northward, which must have been the return of the water forced out by the northerly wind.

"When the winds are variable, I would advise always to keep the northern shore close on board; the closer you are the stronger the land wind is felt. I have seen Dows and Trankeys, that are acquainted with the gulf, going along shore with a full sail, from the land wind, while we were lying becalmed, and tossing about at the mercy of the current."

The North-wester and the South-easter are the only winds which blow steady in this gulf, and they are either right up or right down, in every turn of the gulf. The other winds, when light, become so variable, that they are not to be depended on for one hour: when these light winds prevail, you ought to work between the islands and the main, by which means you may anchor when the current is contrary.

During the winter months, the southerly winds frequently come with some squalls and rain, but they seldom reach Bassora before the North-wester sends them back again; for they have very little rain at Bassora. In these months the high lands to the northward of Busheer are all covered with snow, and ice may be procured at this latter town 6 months in the year; it seems ridiculous that they should take so much trouble to preserve ice, while they neglect things of greater utility, and leave them to destruction.

DIRECTIONS FOR SAILING UP
THE GULF OF PERSIA AND TO BASSORA.

CAPE MUSSENDOM lies at the entrance of the Gulf of Persia, about 18 leagues westward of Bombareck shore: round it are five small islands called THE QUOINS, viz. Great Quoin, Little Quoin, and Gap Island, which are lying together, and South Island, with Lump Island, which are close by the cape. Among them you have from 40 to 50 fathoms water in coming up from Cape Jask; after you have steered N. N. W. for the Quoins, 18 or 20 leagues, if in the night, stand up till you shoal your water to 34 or 35 fathoms, then you are certain of being to the northward of these islands: having that water keep away West, till you are certain of being past the Quoins; then steer W. by S. 40 miles, then West till you make the Great Tumb, which is 22 leagues from the Great Quoin.

If you round the Quoins in the day, you will see the Island *Larek* and that of Kismis; and in standing to the westward you pass that of Angar on the starboard hand; Great Tumb is to be passed on the north side, and when it bears South, Bassadore, or the west Point of Kismis will be N. by W. and the Little Tumb may be seen. These islands lie nearly East and West, per compass, 8 miles asunder.

KISMIS or KISMA * is the largest island of the gulf; it lies but a small distance from the continent, and there is a good channel between, through which many vessels go when they are taken with a strong North-wester; but this channel is very narrow and troublesome to work in; beside a vessel, that is defenceless, is liable to be surpris'd by the plunderers who inhabit these parts. Finnam town on this island is situated near the coast, and is remarkable by a small white fort between it and the sea, and a little white mosque to the eastward of it.

ANGAR is an Island a league in length from N. E. to S. W. about 3 miles from Kismis; it is pretty high, and may be seen 7 or 8 leagues off in a clear day; it is remarkable by a white mosque on its east end.

GREAT TUMB is about the same length with Angar from East to West, and a mile $\frac{1}{2}$ in breadth; the south point runs out low with the water's edge, with 13 to 15 fathoms

* About 5 leagues to the north-eastward of the east end of Kismis lies the Isle of *Ormuz*, distant 3 leagues from the continent: it has two safe ports, one on the east, the other on the west side, divided by a neck of land which runs far out to sea. The CITY OF ORMUZ, situated on this island, was formerly, when under the Portuguese dominion, one of the richest in all the East; but since *Shah Abbas* King of Persia, with the assistance of the English, took it in April 1622, it has lost all its trade, which is removed to *Gambaron*, or *Bunder abbas*, on the opposite shore.

from

from it, then no ground at 25. To the westward of this south point there is water to be found among a few trees growing near it. The bank, which extends to the southward of this island, is not dangerous notwithstanding the suddenness of its shoaling; it runs from the east end about 2 miles, and stretches from the south end near 6 or 7; you have no less than 10 fathoms on every part of it, except when near the island.

LITTLE TUMB is nearly the size of the Great Tumb; but of such an irregular aspect when you make it, that it appears like two or three different islands.

With a westerly wind after rounding the Quoins, you stand up for the south-east end of Kismis; do not venture nearer the shore than 18 or 20 fathoms, which depth will be 2 miles off shore: this coast from the south-east end to Angar is steep to, and the above depth will be near enough for tacking all along: but after passing Angar you may stand into 5 fathoms in the day, and 7 in the night; and off Bassadore, or the west point of Kismis, you may come into 3 fathoms, in a small vessel, but under that it is sandy ground. You ought not stand too long the off tack, because, in case of falling calm, you lose the advantage of anchoring ground.

Between Angar and Kismis there is a good channel with $5\frac{1}{2}$ fathoms in it; on this island there is good water, and plenty of wild sheep and goats. In working athwart the entrance of Kismis channel, pay attention to the set of tides, as they run at the rate of 3 or 4 knots, at times 6 hours each way. After standing over the channel, from 5 to 7 fathoms, you will deepen to 13 fathoms, in SURASH BAY, where there is good anchoring ground, $\frac{1}{2}$ of a mile off shore in 10 fathoms. The clearings for the anchorage are Surash Mosque North, and Cape Sertes W. S. W.: here a vessel is snugly sheltered from the violence of the North-westers; and you can get stock at a moderate rate.

Between POLLIOR and the main the channel is wide, but nearly in the middle there is a rocky knowl with 5 and 4 fathoms on it. Between the two Capes Bustian and Sertes is the town of *Charrack*, where refreshments may be procured; the pilots say there is no danger above 5 fathoms: and in 8 and 10 you have good muddy ground.

Being abreast of the little Tumb, the distance as before mentioned of the great Tumb, steer West for 20 miles; then W. $\frac{1}{4}$ S. till you make Pollior, which ought to be on the starboard bow: if you have a fresh southerly wind, do not come nearer it than 5 or 6 miles, for fear you should get becalmed; but in the night keep a good look out for the Island of Nobfleur, which lies S. W. by S. of Pollior, distant 14 or 15 miles; you must sail between both, keeping Pollior rather the nearest on board till you pass them.

To the S. W. by W. of Little Tumb 7 or 8 leagues, lies BOMOSA Island, remarkable by a high hill in the middle, and several hillocks on the east side of it; it is about 3 miles in length.

SURDE or *Surdy* Island, to the north-westward of this, lies about 6 leagues South of Pollior: it is about 6 miles long from N. W. to S. E. and 4 in breadth: off its north-west end is a dangerous reef of rocks stretching near 2 miles, but the south west side is

clear of all danger. It is inhabited, and water as well as provisions may be got there at a reasonable price. You anchor off the south side of the island, where the town is built; it may be known by three hills, the southernmost being the highest, and at a good distance from the other two, which are nigh one another; to the southward of the middle one is a white mosque.

With a fair wind passing between Pollior and Nobfleur, at the distance above directed, steer W. N. W. for 8 or 9 leagues; if in the night do not come under 20 fathoms on the south side of *Kas*, to avoid a reef of rocks which runs 3 miles from the island to the south-westward: from 17 fathoms you will shoal quickly to 7, hard ground; except this reef, the isle is clear of danger, and you may anchor in any depth on the east, west, or north sides of it; 10 fathoms is near enough for any vessel.

NOBFLEUR, a beautiful island, the best planted with trees in the gulf, and remarkable by a saddle hillock in the middle of it, is well inhabited; you may be supplied there with stock and water at a moderate price: it is about the size of Pollior, but not so high; it cannot be seen above 4 leagues off, whereas Pollior is to be descried at 7 leagues distance in clear weather. Between Kenn or *Kas*, and the main, the channel is 4 leagues wide, with regular soundings from 26 to 9 fathoms, sandy ground.

When you are 6 or 7 miles to the southward of *Kas*, steer N. W. by W. for 10 leagues, you will then make the island BUSHEAB, distant 10 or 12 miles. This is the largest island in the gulf except Kismis; it is of a brown sandy appearance, with groves of trees on the inner side: the channel between it and the main is about 9 or 10 miles broad, with regular soundings, but not under 20 fathoms; the only danger is a reef of breakers stretching 2 or 3 miles from the north-west end of it.

The Island SHITWAR lies off the south-east end of Busheab, and the channel between them is $\frac{1}{2}$ of a mile; there is 10 fathoms in mid-channel: in passing you cannot distinguish Shitwar from Busheab, only by its being of a more fruitful appearance; the date trees on it seem to be on Busheab.

If you pass Busheab 3 or 4 leagues to the northward, you steer N. W. till you get soundings on VERDISTAN SHOAL, which is an excellent guide; with a contrary wind, if it is moderate, and the current favourable (which you may easily tell in the day-time, by what you gain on the land), do not stand under 25 fathoms in the day, or 30 in the night, between the Island Busheab and Cape Nabon, for in that depth you are not above 1 mile or $1\frac{1}{2}$ off shore, and there is no anchoring ground between the island and the cape, but about 4 leagues from the island.

CAPE NABON is a low shelving point to the northward in lat. $27^{\circ} 23'$; at the point it is regular table land, but a little way to the southward and eastward, it is uneven and of various shapes; it appears low by the land behind it being so very high: within 2 miles of the cape you shoal your water suddenly from 30 to 13 fathoms.

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There is a river running parallel to the coast where the inhabitants have 3 or 4 Gallivats which they send out to plunder any vessel they think of an inferior force; their method is to put 3 or 4 old people in a small Trankey or boat, with a few greens, fowls, &c. When a ship is seen in the offing, these people come out with this present, and the Sheik's compliments to the captain: by this means they get admittance, make their observations on the strength of the vessel, &c. and from their report, if the people on shore think there is a probability of success, they immediately send out their Gallivats, and seize her if they can: at any rate they lose nothing by coming off, for they expect twice the value of their present in return from you; if it is not offered they won't be ashamed to ask it.

Opposite to the low point of Nabon is a town called Astola; from this to Tahrie, in lat. $27^{\circ} 42'$, the coast forms a deep bay to the north-westward, and next to Verdistan. This coast is sheltered from North-westers by the foul ground of Verdistan, which extends southward from the cape 15 or 16 leagues, or near the latitude of Cape Nabon; so that a vessel with a fair wind must be very cautious in standing up too far in this bay.

From KONGOON, or in $27^{\circ} 45'$ latitude, you must stand out S. W. and W. S. W. to clear the shoal: you will have 25 fathoms on the inside, and the next cast 7, then 5 and 4, hard ground: with a working wind it is well enough to make a long stretch in, while you have day-light, and the bearings of the land are to be seen. In rounding it, in the day-time never bring *Barnbill* to the southward of East, till the *Hummocks* of *Kenn* are to the eastward of North; when those hummocks bear East, or Barn-hill is E. by S. $\frac{1}{2}$ S. you are past all danger, the whole of it being between *Mongella*, a small island covered with trees, and which is in lat. $27^{\circ} 35'$ to the south-south-eastward, near 10 leagues. The breakers off this cape lie in two ranges, one on the off side of *Mongella*, the other S. E. by S. from the former; and there is an excellent place for shelter against a North-wester between them.

When it blows so hard that a vessel cannot stand the weather, it is advisable to anchor here, in 7 fathoms, where you are well sheltered: the ground between the breakers is stiff clay, and the space about $1\frac{1}{2}$ mile broad. A regular tide has been found there setting nearly in the direction of the shore, that is W. N. W. and E. S. E. at the rate of two knots *per* hour—It is high water on full and change days, at 7h. 30m. the difference between high and low water, being 10 feet.

If a vessel does not anchor here, she must stand a considerable way to the southward, to clear the southern breakers, and there is not the least shelter, on any part of the bank, but under the lee of the breakers, or in fetching into Kongoon Bay, if you are able to do it: but a deal of ground must be lost to get out again when the wind changes. Some people are afraid to deepen their water above 30 fathoms, on account of *Zezarine* and of *Ken* or *Keyn* Island, which is said to lie in 35 fathoms, and only 9 or 10 leagues from

the cape, and in the exact latitude of the islands*. The description that is given of them makes it plain enough that it must be a very clear day when you can see the land of Verdistan 17 leagues off, which is the distance reckoned from these islands to the cape. By that means they are near the center of the Gulf, for its broadest part is between Busheer and Grain, and that does not exceed 50 leagues.

After rounding the cape, in doing which you never come under 12 fathoms in the night, nor 10 in the day; when the hummocks of Kenn bear E. S. E. in 14 fathoms, a N. by W. course, 18 or 20 leagues, will bring you over the neck of land on which BUSHEER is situated. From Mongella Island northward to the Bay, in by Kenn, there are some rocks above water, but they lie entirely out of the track to Busheer: above Kenn to the northward, even to the point that forms Busheer, there is good anchoring ground from 12 to 7 fathoms, mud, 6 to 4 miles off shore; 8 and 10 fathoms are a good depth. In steering N. by W. with a fair wind, you will keep near in 25 fathoms, till you approach *Rishar Point*, within 4 leagues; when the water decreases gradually to 12 or 10 fathoms, then beware of not shoaling it under that depth, till the low land of Rishar bears about E. by N.; you may then coast it in 5 or 4½ fathoms to the outer anchoring ground, where it is advisable to anchor, with the town of Busheer E. by N. in this situation a boat can sail off and on during a North-wester. The reason for not coming under 12 fathoms until you bring the low point of Rishar E. by N. is, that supposing you were with a fair wind to coast it along in 12 or 10 fathoms, a N. by W. course will not clear this neck of Rishar; or if you should neglect sounding, and get into the bay to the southward, it may be attended with difficulty in getting out again, especially if the wind is S. W. or even South, a west course will scarcely clear the point from 5 fathoms. Another caution to be given, is not to pass Busheer, but with the strictest attention to the lead, as the low point of *Rowlab* lies near N. W. of Busheer town, and is hardly discernible in the day; a few shrubs is all you can see in 3 fathoms: when

* Captain *Mors* of the ship *Dragon*, in April 1757, describes them thus.

"KEYN (called also the *Hen*, and by others the *Cock*) and *Zevarine* are both very low and small islands, each being only half a mile in length; they lie N. by W. and S. by E. of each other, distant about 5 leagues. Keyn is in lat. 27° 54', and Zevarine in lat. 28° 8'. The Persian shore cannot be less than 17 leagues distant. The former island is steep to, so that it would be dangerous to shoal your water to less than 30 fathoms, because half a mile round it are sunken rocks and overfalls, from 3½ to 5 and 14 fathoms, then no ground at 20. Keyn is a round bank of sand with a few shrubs on it; the easternmost point has rocks above water, on which are a number of shags, likewise a great many turtle.

ZEVARINE ought not to be approached nearer than 30 fathoms. It seems to be something larger than Keyn, and in the middle of the island is a small rock which can be seen before you make the island; it appears like a boat under sail: you cannot see either of the islands above 3 leagues from the deck. The Isle of *MAX* bears from Cape Nabon S. 2° E. distant 33 leagues. To the east of this island, at the distance of 10 leagues, there are soundings from 14 to 25 fathoms, rocky ground.

pass

past this point you will deepen your water to 15 fathoms, and a N. N. W. will fetch CAPE BANG, according to the tides, for here you must work regular tides, unless the wind is favourable.

If you arrive off Busheer with a strong southerly wind, never think to come to anchor in the outer road, where you have not the least shelter, the point of Rowlah being a lee shore to the southerly wind, and the North-westers blow directly into Busheer: when the southerly wind blows hard, you may expect the North-wester with near a double violence, so that it is a bad road for either of these winds. When a vessel stops at Busheer, which is of a small draught of water, that is any thing under 14 feet, they generally make the signal for a pilot for the inner roads, who is sent out with all expedition.

Busheer Buzzar is well supplied with fruits and vegetables that come from the inland parts; for the neck of land on which Busheer stands is a dry and barren sand incapable of producing any thing. The water is very brackish and very bad; it will breed worms in the people's flesh several fathoms in length: when it is mixed with a spirituous liquor, or lime juice, its quality is not so pernicious, for they have observed that it has a more malignant effect on the Lascars, who do not use strong liquors, than on the Europeans who drink them.

If the wind should blow hard at South, or S. W. stand over for the island of KAREK, or *Karrack*; and from Busheer town bearing E. by N. or E. N. E. a N. W. by W. course, by compass, will carry you directly to the fort, the distance being 11 leagues from 4 fathoms off Busheer. In coming near Karek, if you find the southerly wind still prevailing, you are to round the point of the fort, within a cable's length, and come to an anchor between the islands in 6 or 7 fathoms; but if you should have the least apprehension of a sudden change of wind from the north-westward, you must not attempt to lie between the islands, but weigh immediately, and stand under the other side of the point, where you anchor in 10 or 9 $\frac{1}{2}$ fathoms, $\frac{1}{2}$ a mile from the shore. There you can be supplied with the best pilots for Bassora. To obtain one all vessels make the Sheik a present of a bag or two of rice, and give one also to the pilot's family. Their price is 150 or 160 rupees to carry a vessel to Bassora, and back again; besides the Trankey which attends will be 50 more, and provisions for 5 or 6 people: likewise during the time the vessel lies at Bassora the pilot has 10 rupees *per* month.

The water at Karek is much better than that of Busheer, nor has it its bad quality; the people here are very healthy; but all have sore eyes, which is occasioned by the reflection of the heat from the sands. They are plentifully supplied with fine fish, which, with dates, is their standing food, for they have no grain but what comes from Busheer, and their island produces very few greens. They will sell their bullocks, sheep, &c. but at an immoderate price, if they find you are in want of them.

At

At the north end of Karek lies the low sandy Island of Korgo; the channel between the two is not above one mile in width, but very safe, keeping always the Karek shore the nearest on board; on the north end are 6 or 7 tall date trees, and thereabout is the watering place, where near 40 of our people were cut to pieces in 1768, when the English besieged Karek: the best anchoring ground is on the north-east end of that island. A regular tide runs through the channel $1\frac{1}{2}$, or 2 knots *per* hour in the springs; and it is high water near about 9 o'clock, full and change. The ground round these islands is very indifferent for anchoring, as it is hard sand in several places: the Isle of Karek is very steep to, but where the fort is, 20 fathoms are not $\frac{1}{2}$ of a mile off in many places.

When the pilot is on board with a fair wind for Bassora, he will steer N. W. by W. till he shoals his water on the banks which he calls *Carabak*, having irregular soundings, and overfalls from 12 to 7, and 8 to 10, 7, and 5; then he keeps away, according to the time of tide, with the flood W. by S. and the ebb W. by N. till he gets on the *Atmeydan**, which is a flat of 15 or 16 miles in breadth, with regular soundings of 6 fathoms on the south edge of it, 5 in the middle, and 4 at the upper end; but he seldom goes under 5 or $5\frac{1}{2}$ fathoms. When he comes near the mouth of *Haffar* river, which leads to Bassora, he deepens his water quickly from 5 to 15 fathoms, if in $5\frac{1}{2}$, to 16 or 17 fathoms, this he calls *Core Gufgab*, which denotes being near the bar of Bassora; still continuing the W. by N. or W. by S. course, hauling up, or keeping away half a point, as he finds necessary: after these soundings in *Core Gufgab*, you will quickly shoalen to $4\frac{1}{2}$ fathoms, and this he calls *Mucan*; and from that, to $3\frac{1}{2}$ or 3 fathoms to Bassora Bar: with these soundings he still stands across West, or W. by N. till he deepens to 5 fathoms in *Core Abdillab*; there he anchors till the next flood tide, or if he has sufficient tide to carry him over, he stands away to clear a bank between *Core Abdilla* and Bassora river. When he finds himself on the center of the Bar by his soundings, which are then $\frac{1}{2}$ less 3, or $2\frac{1}{2}$ fathoms, in clear weather he will see the rushes that grow at the entrance of the river, bearing from N. W. by W. to N. by E. and the mouth of the river about N. N. W. when you deepen to $3\frac{1}{2}$ or 4 fathoms, you are then over the bar. The breadth of the bar is above 6 miles, from $3\frac{1}{2}$ on one side to $3\frac{1}{2}$ on the other; the east side is the most dangerous.

From Karek, when the wind is N. W. or W. N. W. instead of working through the channel, you must round the east end of Korgo, then haul to the northward with the flood tide, which here sets N. N. E. or N. by E. Then stand close up, under Cape Bang, if you can weather it, the ebb will be of advantage; if not, come to an anchor under the lee of it, in *Gunnoab Bay*, where there is good anchoring ground in 7, 6,

* This is in the Persian language the name of a square in general, and especially of the great square of Ispahan; it has been given to this flat on account of its being so remarkably level.

and 5 fathoms; with the next flood make a small stretch off, then in again; and you may coast it from Cape Bang to *Bunder Dellim* or *Delam* in 6 fathoms, or 5, in the day time: *Delam* is a sea port frequented by the country vessels, which lies in latitude $29^{\circ} 55'$. From *Delam* keep close up to the banks, and work with the flood, which sets N. N. W. It is advisable never to come under $29^{\circ} 4'$ lat. nor to the northward of $30^{\circ} 5'$. While you are about $29^{\circ} 50'$ you may be certain of being to the eastward of the Bar, for you cannot to the westward exceed its latitude, which becomes a guide in that case; but your whole dependance must be on soundings. After working across the banks till you judge yourself nigh the Bar, the soundings in *Core Abdillah* are an excellent guide, for there you will deepen to 20 fathoms; when you are well southerly, then tack, standing N. N. E. or N. by E. the flood then setting N. W. you will shoal to $4\frac{1}{2}$ fathoms, then deepen to 15 in *Core Gufgah*, when you have that tack, standing W. by S. or W. S. W. crossing the Bar again in 4 fathoms, then deepen in *Core Abdillah* to 8 or 10; then tack and cross the Bar in 3 fathoms; if the flood is strong you will weather *Gufgah*, and instead of getting into deep water, have 3 fathoms on *Mucan* sand; you tack again, and stand to the westward having 3 fathoms, and $\frac{1}{2}$ less 3, mud on the bar; cross over till you deepen to 4 or $4\frac{1}{2}$ fathoms in *Core Abdillah*, after which you are to make short tacks across the bar, and then the rushes will be perceivable. Beware of the east side tack whenever the soundings lessen, as that bank is rather steep to.

When you have crossed the Bar, into *BASSORA RIVER*, continue to work till the tide of flood is at an end; it is high water on full and change days, at 12 o'clock on the Bar, and it happens an hour later every 15 miles up the river; the distance from the Bar to the town of *Bassora* being 90 miles, the difference of the tides between the two places is 6 hours, so that it is high water, on full and change, at 6 o'clock off *Bassora* creek. In coming into the entrance of the river, you see nothing on either side, but long bullrushes; then in 4 or 5 fathoms, keep the larboard shore on board, till you get well in the river, then work close over, from side to side, till you approach *Chillaby's Point*; this lies on the starboard hand, and is known by the first plantation of date trees, which is on that side of the river; there are some scattered trees to the southward of this, but not worth notice.

Off *Chillaby's Point* is deep water, 12 fathoms in the middle, and 7 close to the sand bank that runs off the point, but never come nearer the point than 9 or 10; when you round that point keep that side the closest; opposite to *Chillaby's point*, there is a grove of trees called *Dorab*: from this to *Chubdah Island* you never stand farther over than to open the island with the point. From *Chubdah* to *Barain*, or near *Deep Water Point*, keep close to the starboard shore; you may stand so close that the vessel should have just room to tack: between *Chubdah* and *Deep-water Point* are five islands; *Chubdah* is the largest, and well planted with trees; the others are small and uncultivated: these islands ought

ought never to be approached nearer than 4 fathoms at low water; the shore opposite to them has 6 or 7 fathoms within 5 fathoms off the trees. Deep-water Point is computed to be half way from the Bar to Bassora; it breaks off to the westward, and there are 14 and 15 fathoms within 2 yards of the starboard shore. Although the Island *Malab* has the shoalest water, it is better to keep close to it than to Deep-water Point, where there is an eddy, out of which a vessel that should be drawn in, could not get out but by warping in the stream, and the tide runs so strong that a warp cannot be carried out, till slack water. In keeping close to Malah Island attention must be paid to the soundings; for from 7 fathoms it shoals very quickly, till you are past all the trees on the larboard side; and from this they continue to Bassora, but, by the tombs, are thinner planted than any where else.

When you are past Malah Island the river becomes very narrow, and two or three tacks from this will fetch *Haffar River*, which is three quarters of the way up: here you may border equally on both, but the *Zaine*, or larboard side, has the shoalest water.

From Haffar to *Sybelyat*, which is half-way between the former and Bassora, there is a sand bank that lies near the center of the river, and a vessel has not above two cables' length to work in, and 3 fathoms, or $3\frac{1}{2}$ is the depth in mid-channel. From Haffar to *Ab-el-Kasseeb*, and from that place to Chillaby's Island, 4 fathoms is the deepest water; still keep the larboard shore nearest: there are two islands, the northernmost named Surajee, and the other Chillaby; here the channel is very narrow, on account of these islands lying exactly in the middle of the river; they are 5 or 6 miles in length, and when you pass the north end of Surajee, you can see the Mosque which is at the entrance of Bassora Creek: here she is moored in 4 or $4\frac{1}{2}$ fathoms within a cable's length of the western shore; it is best to lay the starboard anchor to the northward, and the larboard to the southward; then the draught or set-out of the creek will generally swing the vessel the right way.

ADDITIONAL REMARKS ON THE GULF OF PERSIA,

From Captain DAVID RANNIE.

THE coast of Arabia, from Cape Mussendom to Bahrein, is unfrequented, and therefore unknown to Europeans; but many ships go from Karek without Kismis, Pollior, and all the other islands, except the two Tumbs, Bomosa, Surde and Nobfleur, between which last and Pollior they pass in 50 fathoms water. They may also go to the southward of all the last mentioned islands; but it is seldom done, and either way must always prolong the passage; because the capes and islands very much break the force

force of the N. W. winds near the shores, along which there are usually more or less tides, and often a current that will run 4 or 5 days to the eastward; but during the ebb, or if a current should happen to run eastward, a ship can always anchor with safety under some cape or island; so she can if the winds blow to hard down the gulf; but the middle channel has no such advantages; for there are no perceptible tides, the currents seldom run up, but generally down the gulf, and the N. W. winds sometimes blow with great fury, from which there is no shelter, no place to anchor with safety, without losing much ground.

The latter end of January 1737, in the *Grandison*, Captain *Fenton*, at 7 A. M. the Island *Karek* bearing W. N. W. about 8 leagues, the wind at S. S. W. it quickly veered to S. W. and blew so hard that she could carry only a reefed main-sail and whole fore-sail, with which close hauled, she fetched under the lee of *Ormuz*, and anchored in the afternoon. But had she been embayed between *Jask* and *Ormuz* so as not to be able to clear the shore, she must have anchored without any shelter, and where the wind and sea were so great, that it is doubtful whether all her anchors could have held her. That evening the gale ceased, and before morning a land-wind sprung up from the northward; with this wind she ran out, and passed with veerable moderate winds up the middle channel, leaving *Lareck*, *Kismis*, *Pollior*, and all the islands near the Persian coast to the northward, and the two *Tumbs*, *Bomofa*, *Surde* and *Nobfleur*, to the southward of her; but being as high as *Busheab* Island, she was taken with a violent gale from the N. W., and after lying 24 hours under her main-sail, she was obliged to bear away, when after having run within the north-west end of *Kas* Island, she steered along the inside of it, till she came a-breast of the village, near the east end, and then anchored till the weather was over, which she might as well have done under *Busheab*, had she been in shore at the beginning of the gale, since the *Richmond* and *Poultney*, that were then working in shore, met with no such bad weather.

In 1755, or 1756, a Dutch Europe ship, bound up to *Karek* from *Batavia*, went to the southward of all the islands, and having little wind, and a current down the gulf, she anchored somewhere on the edge of the *Pearl Bank*, about $25^{\circ} 30'$ latitude. The wind was at N. W. by N. and N. N. W., and greatly increased, as likewise did the sea, so that being unable to clear the shore, they were obliged to strike yards and top-masts, &c. &c. and at last had almost foundered with all anchors a-head; but luckily for them, they held fast till the gale was over, or every soul would have perished on that desert inhospitable coast.

The following directions for *EL KATIF* on the east side of the Gulf of Persia are supposed to be by Captain *David Simmons*.—When you sail from the Persian shore, it is best to keep for the upper part of the (Pearl) Bank near *Babrein*, and as soon as you have got on it, which you will know by the 27 fathoms to 20 and 19, hard ground, shells, and white sand; keep on till you shoal to 7 fathoms, in which depth you must stand till you see the Sugar-loaf hill, and when that bears S. W. by W. or S. W. of you,

it is open with the bay. Keep steering to the westward, till you make the west side of the bay, which is clear and steep to, 4 or 5 fathoms, within 1 or 2 miles: landward, it is low and sandy, not to be seen far. When you have passed the west point of the bay, steer for the Sugar-loaf till you bring the island on the west side of the bottom of the bay to bear N. W. or W. N. W. and the sugar-loaf S. W. or S. W. by S. then you may anchor in $4\frac{1}{2}$ fathoms, white sand and shells; the north point of the bay bearing N. by E. $\frac{1}{2}$ E. and the other extreme S. by E.

The latitude of el Katif is $26^{\circ} 46'$ North; it lies behind the west-north-west end of the little island, and is seen over it.

GENERAL DIRECTIONS FROM THE GULF OF PERSIA
TO SURAT, BOMBAY,
AND THE WESTERN COAST OF INDIA.

THE beginning of September is the properest time to return from the Gulf of Persia to Surat, or to the other ports of the Western Coast of India. In that month you may expect to meet with small airs at W. N. W. and West. When you have reached Cape Jask, you bend your course from it to the parallel of 23° North, and will find a current running southward that requires some attention, lest it should horse you farther South than to the port to which you are bound. The winds will be found variable thereabout, between the West and the South, and sometimes calm. When you are near $23^{\circ} 50'$ North, a current may again be expected; so that supposing you have a mind to make an E. S. E. way good, you must steer S. E.

This current will attend you frequently into $22^{\circ} 50'$ North, beginning to go southward there, and the winds northerly. With these winds, you pass Diu Point, about 12 or 13 leagues distance; and when you are in $20^{\circ} 37'$ North, you will, by steering a proper course, have soundings, 50 fathoms, sand and shells, in $19^{\circ} 50'$. By continuing the same course, which brings you here, you get soundings, 20 fathoms, sand and ooze: these are on the bank leading to Surat. Steer then E. by S. and in a very little time you will make Cape St. John; be sure to keep in 22 fathoms, till you make it stand about 5 leagues off the land or more; then you may shape your course for Surat or Bombay, as you please; but if you are bound down the coast, your navigation is not so troublesome. *N. B.* In this passage you must take care of the rock already mentioned, and which lies 4° due East from Rosalgat, according to the report made to Lieutenant *McCluer* by the country people.

DESCRIPTION OF BOMBAY HARBOUR,

DIRECTIONS FOR SAILING IN AND OUT, &c.

From Lieutenant M^cCLUER's Account in 1787.

BOMBAY Flagstaff, according to this gentleman's observation, lies in lat. $18^{\circ} 56'$ North. The longitude of the town is $72^{\circ} 54'$ East of Greenwich by Captain *Huddart's* observation. The island by the fort is near a mile broad, and $6\frac{1}{2}$ from North to South. The harbour is commodious and safe, and the soundings regular, except where the few dangers are; namely, the Middle Ground, Sunken Rock, North End of Tull Shoal, and S. W. Prong of the Reef: near these the soundings give little or no warning.

The tides are irregular in the set, and time of high water, at different places of the harbour; within the Middle Ground it is high water at 11h. 15m. and at Mazagon, or the upper part of the harbour, 30m. sooner; at the reef 45m. later. Where the ships lie within the Middle Ground the tide runs N. by E. and S. by W. down the harbour, and off Tull Shoal, it runs nearly East and West, which circumstance proves of great advantage to ships working out in the S. W. Monsoon. Over, on the reef, for the first quarter, the tide sets S. W. by W. but when the rocks appear, it sets more southerly, or along with the direction of the reef; and the flood runs the opposite way.

When the Sun is to the southward, or in the months of December and January, there is a difference of near 2 feet between the day and night-tides, on the springs the night-tides being the highest; but in the months of June and July the contrary is the case. On moderate springs there is generally a rise of 16 or 17 feet at the dock gates.

The Light-house stands near the South extremity of *Old Woman's Island*, now called COLLABA, near 3 miles from Bombay-Flagstaff; it may be seen in clear weather at 7 leagues distance, or in 20 fathoms water. The Light-house Point is surrounded on all sides by an extensive reef of rocks divided into prongs.

The first, called the S. W. PRONG, lies from the Light-house South 40° W. about $2\frac{1}{2}$ miles distant, and is dry at low water near 100 yards from the south end. A vessel ought never to approach so near this danger as to have a hard cast upon it, nor come under 7 fathoms at low water; for from 6 fathoms, the ship may be ashore before the lead can be hove again. In the day-time Mr. *Nichelson's* mark is a good one, keeping the Funnel Hill touching the north brow of Great Caranja, or that part of the Hill E. $\frac{1}{4}$ N. If the Funnel is not perceivable, do not shut in a white building to the northward of Malabar Point till the knob or western hummock on Tull Point, is between

Two Paps on the high land of Tull; then haul in for the S. E. Prong East or E. by N. according to the time of the tide.

The second, or S. E. PRONG, has more the form of a round bank than of a prong; here is little or no danger, as a vessel may steer continually by the soundings. In the night after rounding the S. W. Prong, stand in East, or E. by N. till the Light-house bears North, then endeavour to get a hard cast upon the S. E. Prong, which will direct you for the **SUNKEN ROCK**. With the Light-house N. $\frac{1}{2}$ W. or N. by W. and a hard cast 6 or $6\frac{1}{2}$ fathoms, stand N. E. by N. with a flood, and N. E. by E. with an ebb tide, which will fetch near the buoy, or to the eastward of the Sunken Rock, that bearing E. 15° S. from the Light-house.

Small vessels that wish to come within the Sunken Rock, will, by keeping the island close, have overfalls of 2 and 3 fathoms upon the Light-house spit, which bears nearly E. S. E. from the Light-house; but if Mazagon house is not farther in upon the town than the Admiral's house, the danger is avoided, and those bearings will lead clear of all, within the Sunken Rock, 3 fathoms at low water, soft ground.

When the Light-house and the highest part of Elephanta Island are in one, then you are off the *Elephanta Spit*, which bears W. S. W. from the Light-house. It is not very dangerous, as the soundings upon it decrease gradually, but 6 fathoms is close enough. This Spit is an excellent mark for the reef in the night, coming from the northward. After passing Malabar Point in 7 or $7\frac{1}{2}$ fathoms, low water, keep along South, or S. by E. till the Light-house bears E. N. E. with these bearings, and a hard cast upon the spit, 6 or $6\frac{1}{2}$ fathoms, steer out South, or S. by W. to go clear of the S. W. Prong, which will be done when the Light-house is N. E. by N. then haul in as before directed East or E. by N. till the Light-house is N. $\frac{1}{2}$ W. or N. by W. then stand for the buoy of the Sunken Rock.

To have a hard cast upon the S. E. Prong is of the utmost consequence in rounding the reef in the night, because it is a guide for the Sunken Rock; and people by not keeping the reef close, get over on the foul ground of Tull: here from mid-channel to either side, across the harbour, there is not a fathom difference, therefore it will be necessary to sound the S. E. Prong close, especially with a westerly wind and flood tide.

THE FOUL GROUND OFF TULL may be reckoned the most dangerous shoal in the harbour, particularly when the knob or outer point bears S. E. With these bearings the shoal is steep to, from $6\frac{1}{2}$ to 4 fathoms in one cast: you ought therefore never to stand nearer it than 7 fathoms in the Monsoon; or the west end of Butcher's Island touching the low hill at Trombay, or Kennery S. by W. These marks are very well in clear weather, but in the Monsoon the soundings and your judgment are the only guides; then the leadsmen must be very careful in feeling the ground, whether hard or soft. Ships turning out in the Monsoon fetch near this point the first board, and are often

often obliged to tack before the anchor can be stowed: the second board will fetch the Prongs; the third will clear the dangerous part of Tull, or bring the knob East, or even E. by S. and the fourth board will clear all the danger of the reef. It is reckoned best not to stand on the last-mentioned tack farther than to bring the Light-house N. E. or N. E. by E. but work at the entrance of the harbour during the ebb. The pilot generally takes his leave with Kennery Island S. S. E. or S. E. by S., which is clear of the harbour and all its dangers.

After having cleared the harbour, the grand object is to get an offing, and to avoid anchoring. To accomplish these, attention must be paid to the winds and time of the year. In the yearly months the squalls hang to the southward of West; then you ought to keep in with the land during the ebb, that it should help you to get to the southward as much as possible. By being well to the South of the harbour the next flood is scarcely felt, and if the wind will admit of a N. by W. course, you should stand off for four hours; then tack: in coming in with the land again the ebb would be made, and probably would permit to stand on, which you should do, if you continued in the same depth of water; and the next flood you would gain a sufficient offing in 30 or 35 fathoms, and still be to the southward of Bombay. In the later months you should proceed in a different manner.

In the latter end of July and the month of August the squalls haul well to the northward of West; ships have been known at this time to stand a direct course from the harbour with a fair wind: however as this is not always the case when clear of the entrance, it is advisable to stand to the westward with the ebb, and to the southward with the flood-tide; and could you lie up to the westward of South, the flood will have no bad effect. The strong freshes from the rivers will be more than equivalent to the swell and leeway. Ships have often been obliged to stand in S. E. by S. and S. E. to keep in proper depth of water going down the coast.

To the southward of Bombay is a *Bank of soundings*, which, to those not acquainted, is somewhat alarming, especially in working out for an offing; from 30 to lessen to 25 and 24 fathoms, causes them to imagine that they have lost ground and are drifting in with the land again, when in reality they are going from the shore. This bank is an excellent guide for ships coming to Bombay in the S. W. Monsoon. It is to be observed that during the traverses backwards and forwards upon this bank, Lieutenant *McCluer* never had less than 22 fathoms, therefore Mr. *Nichelson* must have been misinformed by those who said that there is 16 fathoms on it *.

* This bank was surveyed in the *Peteril* cutter, Lieutenant *William Downes*, October 1773. It is 19 leagues in length; the north end is $5\frac{1}{2}$ leagues broad, off shore *per* log 9 leagues, and the south end $6\frac{1}{2}$ leagues, *per* log off shore 7 leagues. It extends from the lat. $17^{\circ} 55'$ North, to $18^{\circ} 43'$ North, and the shallowest water we had on it (says Mr. *Joseph Mascall*) was 26 fathoms, in the lat. $18^{\circ} 22'$: approaching the shore you will have 31 fathoms, mud; within it 25, small gravel and shells, and without 36 fathoms, mud.

Falling

Falling in with the land in that Monsoon, the first caution is to make a proper allowance for the currents, which in the months of May, June, and part of July, set northward within the extent of soundings on this coast, and are of great assistance to vessels working up it before the S. W. Monsoon commences. Half of July, August, and September, owing to the heavy rains which fall in these months, and to the great out sets from the Gulf of Cambay, as well as from the rivers to the North of Bombay, the currents are changed southward from 20 to 30 miles *per* day, which rate seldom fails; an allowance accordingly may be made. The method followed now by most people, is to keep off the coast till near the latitude of Bombay; by which means they have a better chance of obtaining their exact observations, as being in clear weather. The squalls and heavy rains on this coast seldom exceed the bank of soundings, or above two degrees from the land; and the weather in a great measure denotes your approach to the shore. After being in the latitude of the entrance of the harbour, they stand in due East, and having such a great distance to run on that point, the ship is often some miles to the northward or southward of the port, owing to bad steerage and other incidents.—If in the early months of the S. W. Monsoon you make to the northward of the harbour, it is a dangerous mistake, as the winds hang southerly when in with the coast, and the seas run so very high that it would be a very difficult matter to work to the southward; but in such a case advantage must be taken of the tides, keeping in shore with the ebb, and off with the flood; if moderate, come to an anchor.—In the months of August and September it is not so dangerous to get to the northward of the port, as the squalls haul more northerly, and the current sets strong to the S. W. owing to the freshes from the rivers, and the Gulf of Cambay. To prevent all accidents of this kind, recourse must be had to the Bank of soundings to the southward of Bombay, and the most eligible plan for falling in with the land about Bombay is this.

If you can by any means obtain the latitude, either by meridional altitude of the Sun, or double altitudes, fore or afternoon, or by the stars, within 5, or even 10 miles of the truth, it is of little consequence; stand in for the land without fear, sounding every four hours in the night, till you get soundings: in the day the snakes will point out your depth of water, the large ones being in above 45 fathoms and the small ones in and under that depth. Having obtained the latitudes nearly, stand in for the land between the lat. $18^{\circ} 15'$ and $18^{\circ} 30'$ North, till you strike soundings on this bank to the southward of Bombay, from 22 to 26 fathoms, coarse sand and small shells of various colours: with these soundings stand along the bank, under an easy sail, about North or N. N. E. noting your soundings each hour, till you get off the bank, and deepen the water to 30 or 32 fathoms; then you are certain of the situation of the ship, and may shape a direct course for the entrance of the harbour.

DIRECTIONS FOR SAILING INTO BOMBAY IN HAZY WEATHER,

By Mr. NICHOLSON.

IF you keep in $18^{\circ} 50'$ North, you will run in exactly midway between Old Woman's Island, (*Collaba*) and Kennery. Being in the offing, so that you cannot see the proper marks for going into harbour, observe the following directions. If the Funnel Hill is not to be perceived, keep the north part of Great Caranja Hill, E. by N. and run in with that bearing, which will carry you clear of the reef off Old Woman's Island, until you open the harbour; and if you cannot see Mazagon House nor Hill, then keep the north-east bastion of Bombay castle North, or N. $\frac{1}{4}$ E. and this will carry you clear of the Sunken Rock. When you are within that, you will see the other marks to carry you clear of the Middle Ground, &c. or being in the opening of the harbour, and you can see nothing else but the north-east bastion and Dungeree fort, keep the said fort just open, or touching that bastion and this mark will carry you clear of all danger into the harbour.—*N. B.* Great ships should not go up the harbour higher then to bring the Brab-tree in the castle, and the Flag-staff in one, for higher up the water is shallow. There are some spots where ballast has been thrown, upon which several Indiamen have been aground at low water spring tides.

SAILING OUT OF BOMBAY.

BEING bound outward, keep Suree Fort a ship's length open to the westward of Crofs Island, which will carry you clear of the Middle Ground; and when you open Malabar Point, to the southward of Mendam's, you are to the southward of it, and may haul to the eastward: steer down the harbour with Mazagon House, a ship's length open with the north-east bastion, till Malabar Point is open to the southward of the Brab-tree, on the outer part of Old Woman's Island; this will carry you clear of the Sunken Rock. When you open Malabar Point with the outer part of Old Woman's Island, you may keep close up under the reef, if the wind is westerly, which is generally the case in the afternoon: and for a leading mark, keep the Flag-staff a sail's breadth open to the eastward of Oyster Rock, till you have shut the Funnel Hill in with the north part of Great Caranja Hill; then you are clear of the whole reef off Old Woman's Island, and may haul to the westward as you please.

DIRECTIONS

DIRECTIONS FOR SAILING FROM BOMBAY,

DURING THE S. W. MONSOON, BEING BOUND TO THE SOUTHWARD,

By Mr. NICHOLSON.

AT this season of the year, as soon as you are without the harbour, there runs a prodigious sea, which, with a strong ebb tide, is breaking as if you were in shoal water. Make your utmost endeavours to get an offing, taking advantage of all the shifts of wind, and always observing to stand on that tack you can make most westing of. The wind will shift 2, 3, and sometimes 4 points at a time in the squalls, which are frequent, with almost incessant rain; but by no means be prevailed on to come to an anchor. The best latitude to get an offing is $18^{\circ} 30'$.

When you have got an offing, and are in 35 or 40 fathoms, you may steer the along-shore course, if the winds permit, making an allowance of at least $\frac{1}{4}$ or $\frac{1}{2}$ of a point for the prodigious swell that comes from the W. S. W. If you can make your course good S. S. E. keeping your depth of water, you may depend it will carry you clear of all the coast.

Although the wind will favour you as you run along, and the more you get to the southward, yet be not covetous to take too great an offing; and by no means go out of soundings, but keep in 40, 45 or 50 fathoms, till you get $12^{\circ} 30'$ or 12° North. When you stand in towards the land come not nearer than 16 or 15 fathoms, as the weather is generally very hazy at this season. There is also a strong southerly current, which favours a ship 20, 22, and sometimes 26 miles in the 24 hours, more than the run will give; therefore you ought to make this allowance all along the Malabar Coast, in the S. W. Monsoon.

Being in latitude 12° North, or thereabout, and having 45 or 50 fathoms, you may be sure you are within the Lakedivas; but if you lose soundings on the coast, you cannot be so certain, whether you are without or within these islands, and run a great risk of falling amongst or upon them, on account of the thickness of the weather.

Soon after this you lose your soundings, for farther to the southward, there are none at that distance from the shore: you may then with greater safety steer S. S. E. which will carry you clear, both of the Malabar coast, and of the Lakedivas, to Cape Comorin. As soon as you are half a degree to the southward of Cape Comorin, you get clear of all the rain and hazy weather, and have then a fine clear sky, with fair weather.

GENERAL

GENERAL DESCRIPTION OF THE COAST OF INDIA,

FROM BOMBAY TO SURAT;

WITH SAILING DIRECTIONS.

FROM Bombay, when bound to the northward, it is best to leave the harbour within an hour of low water, as you will then get to the westward of the reef by the time the flood makes, which with the wind a little open, will probably carry you as far as Mayhim roads, to the north of Bombay island, by the return of the ebb.

If you sail into MAYHIM, keep the Portuguese church a small sail's breadth open to the southward of Mayhim flag-staff, till you have the round hill, (to the N. E. of the town) open to the northward of the old Portuguese church, and in the middle of the low lands: steer with the above marks, till you open the Portuguese church clear to the northward of Mayhim Fort; you may then steer up for the middle of the river, and anchor a-breast of the Portuguese church in $2\frac{1}{2}$ fathoms, at low water. Another good mark for going over the bar, adds Lieutenant *Edward Harvey*, is the point of the farthest hill (which stands on the island N. by E. from the town) on with the north part of Mayhim fort, till you have the mark as before directed: to go clear of the shoal to the westward of the town, you must open the writing office clear to the northward of Mayhim fort.

From Mayhim roads to Basseen river the distance is about 5 leagues North, and 3 or 4 miles to the northward of them lies *Verfoab* Island, with a fort at the entrance of a small salt river. The shore all the way is low and even, except some hummocks; within land it shews itself also in hillocks, but higher. You may sail along this coast in 10 or 11 fathoms free from danger, except the fishing stakes, which are found very far out, and within which the passage is unsafe. Here is good anchoring ground, if becalmed, or if the tides are against you, which between Bombay and Basseen set N. by E. and S. by W. when 3 or 4 leagues off shore. The flood thence runs to the N. W. by N. and the ebb S. E. by S. as far as St. John's point, the freshes out of the country making the water very thick.

Off the entrance of BASSEEN RIVER the water shoals a great way off: for going into that river, bring, before you come under 5 fathoms, the south steeple of Basseen town in one with the first little peak to the southward of the great one; then stand in for Puspear Rock, and as you approach it, edge away round the southern side of it till it bears North, or N. by W. then stand straight over for Daravee battery.

About Basseen the coast is even, and at the end is a valley wherein the town is situated, to the southward of which is a high round hill with a fort: when this bears East you then

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have the entrance of the harbour open between two little rocky islands, through which you must pass one on the north side, the other on the South: this port having but little water, is only fit for small vessels.

From the south point of Bassen river, about 4 leagues to the N. N. W. you meet with the small island and fort of *Arnoll*; and about 12 leagues farther, in a northerly direction, lies point St. John; in all this part keep off shore at least $3\frac{1}{2}$ leagues, on account of the rocky banks, which stretch into the sea 2 or 3 leagues; at the former distance, from the lat. of $19^{\circ} 40'$, the depth is 17 or 18 fathoms. If necessity should oblige you to turn it, you must come no nearer than 16 fathoms, for fear of falling suddenly on some places of 7 or 8 fathoms, foul ground. The tides, which generally set N. N. E. and S. S. W. sometimes incline towards the shore; this you must observe, and not anchor, unless you find it impossible to stem the current.

POINT ST. JOHN, called also the *High land of St. John*, lies in $20^{\circ} 2'$ or $3'$ North; 3 or 4 leagues inland to the southward of this point are two high peaks, one called *Terrapore Peak*, in the form of a pyramid; the other *Valentine Peak*, shaped like a castle: all the coast is high thence to the point, the extremity of which is highest; along shore the land is low and covered with trees.

About 20 miles N. N. E. from Point St. John lies the town and port of DAMAON, or *Daman*, which belongs to the Portuguese, and is the next to Goa on this side of India. It is situated near the mouth of a river wherein small vessels may lie very secure during the Monsoon.

When you have doubled the high land of St. John, being bound to Surat roads, keep the mid-channel, where you have 16 or 17 fathoms, mud. Above all take care of sailing too far to the westward, and of nearing the outer banks farther than 20 or 22 fathoms, mud; for if you find, upon sounding, sand, gravel, or rock, you will be near those shoals, over which you cannot pass, even at high water; and then you must immediately stand to the eastward to regain the channel: neither on the east side must you come under 10 fathoms; but if your soundings are gravel or rocky, you must stand right off to the westward: too near the land is dangerous, the currents horsing you thereon in a calm; and a good way out lie several rocks under water. Take good notice of this observation till you have got to the northward of Daman; then you may near the coast at pleasure, as the bottom all along is soft mud as far as Surat roads.

The coast between point St. John and Surat river is low and even; and remarkable, about 3 or 4 leagues to the southward of the entrance, by three small hills.

DIRECTIONS FOR SAILING FROM BOMBAY TO SURAT.

WITH A TIDE-TABLE FROM BOMBAY TO SURAT ROADS;

By Captain CABLE.

AFTER getting clear of the reef you should not stand farther off shore than into 12 fathoms, working between that and 7 fathoms, until you get the length of Terrapore Peak, just now described. You must then keep a great offing, working from 13 to 14 fathoms, and from 18 to 20. When the body of the high land of St. John bears E. N. E. you are then entering into the south end of the foul ground, which runs off into 12 fathoms; therefore it is not safe to come under the depth of 13 or 14; keeping without that, till the high land of St. John bears E. S. E. lest you should be obliged to anchor by its falling calm, or the flood tide being expended, and be then liable to lose the anchor by having your cables cut.

Without you have a leading wind, it will be necessary you should anchor every ebb tide, for which purpose I shall add a tide-table between Bombay and Surat. Being clear of the foul ground of St. John, if you have a leading wind, steer in shore N. N. E. or N. E. by N. and if you find the tide of flood carries you to the N. W. so as to deepen regularly from 17 to 18, 19 or 21 fathoms, keep your course the more easterly, until you shoal your water gradually to 9 or 10 fathoms as far as Daman: this town is known by two very high steeples, as well as by the hills to the northward of them that form four knobs declining to the southward; and by Endergur fort, on the hill to the South of the river about $2\frac{1}{2}$ miles. When you are abreast of Daman, and in the depth aforesaid, keep the same all the way to Surat roads; your course being between N. by E. and N. by W. But should you, by contrary winds, be obliged to work after you are past St. John, standing to the N. W. do not deepen your water more than 21 or 22 fathoms; there is a land you shoal very fast from that depth, St. John bearing S. E. $\frac{1}{2}$ E. when you must immediately tack, and stand to the eastward in 9 or 10 fathoms, remembering not to come into that depth unless St. John bears to the southward of E. S. E. After you have brought the round hill of *Penella*, which is a remarkable mountain standing by itself about Daman, to bear about East of you, do not stand to the southward into more than 13 or 14 fathoms, working between that depth and 7 fathoms, until you get into Surat roads.

N. B. There is foul ground under 7 fathoms water off *Vaccas* or *Agacim*, called also *Agassies*, a low island with cocoa-trees upon it, 6 miles to the northward of Bassien. I mention this, that you may not stand under that depth, when abreast of it, lest necessity should oblige you to anchor. It is requisite, also, you should keep your lead frequently heaving, when you get past Terrapore.

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To anchor in Surat road; Domus-tree N. E. $\frac{1}{2}$ N. to N. E. by N. Vaux's Tomb, on the north side of Surat river, N. by W. to N. $\frac{1}{2}$ W. you have about 9 fathoms at high water, and 7 $\frac{1}{2}$ at low water.

A Tide-Table from Bombay to Surat Roads.

Names of Places.	MOON'S AGE.														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.
In Bombay Road	12.3	12.51	1.35	2.27	3.15	4.3	4.51	5.39	6.27	7.15	8.3	8.51	3.39	10.27	11.15
Off the Reef	11.48	12.36	1.24	2.12	3.0	3.48	4.36	5.24	6.12	7.0	7.48	8.36	9.24	10.12	11.0
the Main	12.33	1.21	2.9	2.57	3.45	4.33	5.21	6.9	6.57	7.45	8.33	9.21	10.9	10.57	11.45
Basseen	1.3	1.51	2.39	3.27	4.15	5.3	5.51	6.39	7.27	8.15	9.3	9.51	10.36	11.27	12.15
Terrapore	1.48	2.36	3.24	4.12	5.0	5.48	6.36	7.24	8.12	9.0	9.48	10.36	11.24	12.12	1.0
Cape St. John	2.48	3.36	4.24	5.12	6.0	6.48	7.36	8.24	9.12	10.0	10.48	11.36	12.24	1.12	2.0
Daman	3.18	4.6	4.54	5.42	6.30	7.18	8.6	8.54	9.42	10.30	11.18	12.6	12.54	1.42	2.30
Gandivi	3.48	4.36	5.24	6.12	7.0	7.48	8.36	9.24	10.12	11.0	11.48	12.36	1.24	2.12	3.0
Nossari	4.18	5.6	5.54	6.42	7.30	8.18	9.6	9.54	10.42	11.30	12.18	1.6	1.54	2.42	3.30
In Surat Roads	4.48	5.36	6.24	7.12	8.0	8.48	9.36	10.24	11.12	12.0	12.48	1.36	2.24	3.12	4.0

BLOWING WEATHER IN SURAT ROADS.

DIRECTIONS FOR GOING OVER SURAT BAR.

ACCORDING to Lieutenant *McCluer's* observation, SURAT ROADS, in 8 fathoms, lie in lat. $21^{\circ} 0'$ North; Vaux's Tomb, or Swallow Point, by an artificial horizon, $21^{\circ} 4'$; and the Chief's Garden-house in $21^{\circ} 11'$.—The anchoring ground for large vessels is 7 or 8 fathoms, low water, Vaux's Tomb N. $\frac{1}{2}$ E. and the entrance of Falso River E. by S. and E. S. E. Here the spring tides are very rapid, running 4 and 5 knots *per* hour; but it is not so much felt by the smaller vessels, which lie farther in, about 4 or 5 fathoms, with the Tomb N. or N. $\frac{1}{2}$ W.

It is very remarkable that the blowing weather sets in much sooner at Surat, than at Bombay, and you often have very smart gales of wind in the months of April and May. It is certainly very dangerous, for vessels of a great draught of water, to lie in the roads after the middle of April, as their sole dependence is upon the ground tackling: on the ebb tides there is the greatest danger, as you have a windward tide, and it is not uncommon

common to roll away the masts. Small vessels may always escape by running over the bar, or if the wind and tide will permit, they may run to Gogo, where they are sheltered by the island and reef of Peram. Several ships have, in riding at their anchor too long, either foundered or gone ashore, by the wind hauling round to the westward, when they could not weather Swallow Point.

In the above-mentioned months, April and May, the approach of a gale is known by cloudy weather, gloomy and black to the south-eastward, with lightning, and light variable winds hanging chiefly in the south quarter. With these tokens, it will be best to ride at single anchor, for if you be forced to slip or cut, one anchor only is lost, and you have another bower ready to bring up occasionally. Top-masts, &c. may be struck, but the fore-yard with the fore-sail bent should be kept up, as also the fore and mizen-stay-sails, which sails will be sufficient to stand with either to Gogo or over the bar. The first of the gale generally sets in from the S. E. and hauls round gradually to the S. W.; when it comes about South, it is then time to look out for a place of safety. Most vessels when they anchor in the roads, at this period of the year, have a pilot constantly on board, owing to the many accidents which have lately happened.

For going over SURAT BAR, when you weigh from the roads, stand to the northward, till you bring Vaux's Tomb N. by W. and the great tree which stands a little to the southward of Dombes, or Domus, N. E. by E. Then steer in for it N. E. by E. $\frac{1}{2}$ E.; when you have the tomb N. N. W. then you are at the edge of the bar; the water rises 3 fathoms up and down: in steering in N. E. by E. $\frac{1}{2}$ E. observe your soundings, as you have a long sand on each side of you, steer in as aforesaid, till you bring the Tomb N. W. $\frac{1}{2}$ W. and the Great Tree N. E. $\frac{1}{2}$ N. then haul up N. by W. or N. N. W. according to the strength of the flood, edging away to the eastward, as the water shoals, till you bring the Tomb N. W. by W. and the Tree N. E. by E. then keep away North. Observe to keep the northernmost sand as nigh as possible, if the wind is fresh, (for if you come too near the southernmost, it will be dangerous to get clear from it) till you bring the Tomb W. by N. and the Tree East. Then you may steer in N. N. E. for Domus, hauling out to the northward, as you shoal your water, or near the shore.

When you come into Domus, stand up till you bring the old tall Brab-tree well to bear N. E. by N. or rather till you are clear of the western, or Middle Sand, which lies between Domus and the Toddy Bank; then stand over about N. W. steering for the lower point of the tall Brab-tree at *Swalley*: be sure to keep as near the Western Sand as possible, to prevent the flood throwing you on the Middle Island, the channel being very narrow.

When you come over to the Toddy Bank, keep near mid-channel, till you come to the head of the island, or beginning to open Domus creek, then stand over for the Great Tree at Gantalowra, and keep the starboard shore on board till you pass Roan: then steer in mid-channel till you are round Omrah Point, keeping likewise the starboard shore on board till you come to your birth, where you intend to moor, or make fast.

SAILING DIRECTIONS FOR THE GULF OF CAMBAY,

By Mr. SKINNER.

"FROM Surat to the northward keep in 10 or 13 fathoms water, and 3 or 4 miles from the shore, which will carry you between the *Inner* and *Outer Sands* of Swalley; the outer is 6 miles from the shore, and the inner $1\frac{1}{2}$ mile, both which are dry at low water, spring tides. When Cutcheree Tree bears E. by N. (which is known by a large single brab-tree upon a low point) keep out W. by N. till you have the following bearings, viz. Bogway Point N. E. $\frac{1}{4}$ E. Donda E. by N. $\frac{1}{4}$ N. Cutcheree Tree E. by S. $\frac{1}{4}$ S. then clear of *Goolwaller Sand* to the westward, soundings from 10 to 14 fathoms, steer N. by W. which will carry you safe into *BAROCHE ROAD* from 14 to 8 fathoms, where you may safely anchor with the following bearings; Baroche Point N. by E. $\frac{1}{4}$ E. Cutchajal S. E. Peram Island W. $\frac{1}{4}$ N. from the point 4 or 5 miles, 6 fathoms at low water; the bar lies in $21^{\circ} 33'$ latitude North. High water on full and change, 30 minutes past 4 o'clock: it ebbs and flows 5 fathoms, and runs 6 miles an hour.

"To the southward of the bar is *Baroche Sand*, which lies North and South: it is $3\frac{1}{2}$ miles long and $1\frac{1}{2}$ broad, and within 30 yards of either side, from 2 to 3 fathoms deep; between it and the *Inner Sand* (which runs from the shore 5 miles here, and continues as far to the southward as Tanar, the breadth decreasing, and which dries at low water spring tides) there is a good channel to the bar from 7 to 3 fathoms water, and $1\frac{1}{2}$ mile broad; the mark for it is to bring Peram Island W. N. W. $\frac{1}{4}$ W. steer in with it until Baroche point is N. by W. $\frac{1}{4}$ W. then haul up for it till you have Peram island W. $\frac{1}{4}$ N. this will carry you abreast of the bar in 3 and 4 fathoms at half a mile distance.

"There are two sands off Bogway, called *Goolwaller* and *Bogway*, which are dry at low water, spring tides; the former lies North and South, being $4\frac{1}{2}$ miles long, and half a mile broad; it lies off shore from Donda $6\frac{1}{2}$ miles: the latter, which lies N. by W. and S. by E. is $5\frac{1}{2}$ miles long, $1\frac{1}{2}$ mile broad at the north end, and $2\frac{1}{2}$ miles at the south end; the distance from the shore is $3\frac{1}{2}$ miles, and within 20 and 30 yards of each sand you have 3 and 4 fathoms water. Between these sands is a good channel to sail or work through in the day-time, but excessively dangerous in the night, for you cannot depend on your soundings; therefore in the night it is advisable to go to the westward of *Goolwaller*; the channel between the sands is from 2 to $2\frac{1}{2}$ miles broad, and the soundings from 5 to 9 fathoms.

" From Broche, or Baroche, to *Iumbascer* keep within 3 miles of the shore, in 7 or 8 fathoms, low water; and in working do not stand at any time above 2 leagues off, from 8 to 10 fathoms, because the tide is so rapid, that in case of falling little wind, you would meet with great difficulty to get in shore again: from the shore a flat runs off $1\frac{1}{2}$ and 2 miles, dry at low water, spring tides, which continues from *Iumbascer* to *Dagon*; to the northward of *Iumbascer* in some places it runs 4 or 5 miles from the shore; close to it from 4 to 7 fathoms water.

" *IUMBASCEER ROAD*, which lies in the latitude $21^{\circ} 49'$ North, is known by a pagoda on the north side of the entrance of the river called *Diu*; the marks for anchoring are, the aforesaid pagoda N. E. by E. $\frac{1}{2}$ E. and *Iumbascer* point E. by N. in 7 fathoms, low water, the dry part of the flat $\frac{1}{2}$ a mile distance; and from the Pagoda 4 or 5 miles with the aforesaid bearings, you will have very little tide, and lie with great safety, the north part of the flat breaking the strength of the tide. High water on full and change 48 minutes past 4 o'clock, ebbs and flows 6 fathoms; this is a great place of trade for cotton, grain, and oil.

" The distance from *Iumbascer* to *GONGWAY* is 6 leagues, with a channel $1\frac{1}{2}$ mile broad, but very dangerous, the tide running with such amazing velocity: soundings from 7 to 2 fathoms, first quarter flood. In going keep within a quarter of a mile of the flat in 2, 3 and 4 fathoms, until you have brought a small cluster of trees East; then haul in for the shore, keeping within 200 yards of it up to *Gongway Road*; and when abreast of the town, you may safely anchor about 80 yards from high water mark, where you will ground at first quarter ebb. It is dry over the bay from the latitude $22^{\circ} 3'$ North to *Cambay* at low water, spring tides. No vessel attempts to go above *Gongway* in a tide from *Iumbascer*, as it is attended with bad consequences; for if they cannot get into *Cambay* creek, they must return to *Gongway*. High water at *Gongway*, quarter past 5 o'clock, on full and change.

" It is 5 leagues from *Gongway* to *CAMBAY*, which lies in the latitude of $22^{\circ} 24'$ North; at first quarter flood they always weigh and stand over, keeping the pagoda (at *Cambay*) bearing N. by E. $\frac{1}{2}$ E. and in working from N. by W. to N. E. by N. the soundings are from 2 to 4 fathoms: you must keep the shore close aboard until you are to the northward of *Dagon*, meeting with great overfalls, and the tide running so rapidly, that if the vessel should take the ground, she must overset immediately, and in all probability every soul on board perish, which often happens through the neglect or obstinacy of the pilots. N. B. The tide sets N. E. and S. W.

" From *Surat* to *Gogo*, keep (as mentioned in the remarks from *Surat*) to the northward until you get clear of *Goolwaller* sand to the westward; then steer over for the Island of *PERAM*, keeping to the eastward of it about $1\frac{1}{2}$ mile, in 14 and 15 fathoms water, as it is very dangerous, and environed with rocks and shoals: when it bears S. W. steer N. N. W. your soundings are from 11 to 9 fathoms, until you get the following

lowing bearings on, the body Peram S. by E. $\frac{1}{2}$ E. Kourah Point S. S. W. Gogo ditto W. N. W. then haul up for the body of Gogo town, which will carry you clear of *Gogo Sand*, soundings from 10 to 3 fathoms. When the following bearings are on, you may anchor with great safety, viz. Gogo point W. by S. Kourah S. by E. $\frac{1}{2}$ E. house on Peram S. S. E. $\frac{1}{2}$ E. distance from shore $\frac{1}{2}$ a mile, in 3 fathoms, low water; the town lies in $21^{\circ} 44'$ north latitude, and its road-head is a safe place in the S. W. Monsoon, where you may run to in case you happen to part from your anchors in Surat roads, it being an entire bed of mud for $\frac{1}{2}$ of a mile from the shore, and always smooth water. Ships here get supplied with stores and provisions, and repair any damages they may have sustained; the natives, who are principally Moors, build vessels from 50 to 300 tons burthen."

**DIRECTIONS FOR VESSELS TO MAKE THEIR PASSAGE TO BOMBAY,
IN THE MONTHS OF MAY AND JUNE, FROM SURAT BAR,**

By Mr. SKINNER.

"IN case vessels are drove from their anchors, which frequently happens in those months, through the violence of the S. W. Monsoon, and a heavy swell setting in upon the flood; they should either make for Gogo as before directed, or stand over for the *Sultanpore* shore as soon as clear of the south-west part of Goolwaller sand, which may be gained (from Surat roads) by the last quarter flood (to run up) and half ebb, and then they work down along shore to Diu-Head by the assistance of the tides; the shore is bold from *Groapnought Point*, till within 5 miles of the east part of Diu Island, when an offing of 4 or 5 miles must be given, there being a reef of rocks running to the S. E. 2 miles. When the vessel gets as low as Diu head, she must stand off with an ebb tide, which will carry her clear of every thing, and fetch Bombay without making the land before you have entered its latitude; this should be attended to, for the tides upon the neaps have not sufficient strength to contend with the great western swell that sets upon the shore at the above season of the year, between Bassien and Bombay, which renders it difficult for heavy ships to get an offing. I have known vessels to have been several days in getting an offing, of 4 or 5 leagues; and have myself, in going to Surat, not got 4 leagues off, when abreast of St. John's, and with much trouble, not without danger, cleared the rocks which surround that cape. For Baroche bar and river, bring Baroche point N. by E. Peram W. $\frac{1}{2}$ N. the entrance of the river E. N. E. steer
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for it. Baroche Point, when N. by W. $\frac{1}{2}$ W. haul up N. E. by E. soundings from 6 to $2\frac{1}{2}$ fathoms at $\frac{1}{2}$ flood, spring tides. When the aforesaid Point is N. W. westerly, steer N. E. by N. from 5 to 3 fathoms, till you have the north shore aboard, and then keep along it at 20 yards distance (this is the place where the northern Gallions lie for the merchant boats, and is just within the Bar); having got Coleycat North, steer E. by S. and when you bring it N. W. steer S. E. from 3 to 8 fathoms; as soon as the two Brab-trees on the Baroche shore bear N. N. E. haul up for them till you are within 10 yards of the shore, from 5 to 9 fathoms, which you must keep close aboard; when two pagodas on the north shore bear N. by E. keep out S. by W. into mid-channel, to avoid a shoal that runs one third over the river from the Baroche shore (upon it at high water, 1 fathom), soundings from 4 to 2 fathoms; Barbouche when N. E. by E. steer for it from 3 to 9 fathoms; when abreast of the town you will have 6 fathoms at low water, where a vessel of any burthen may lie with safety. From the aforesaid town to Baroche the banks are from 12 to 20 feet high, which you must keep close aboard, there being little water upon the southern shore; but off Baroche, a vessel may anchor within 30 yards of it, and will have 4 fathoms at low water. *N. B.* The tide's ebbs and flows at spring tides upon the bar $2\frac{1}{2}$ and 3 fathoms."

DESCRIPTION OF THE COAST OF GUZURAT,

FROM

GROAPNAUGHT POINT TO DIU POINT, &c.

FROM GROAPNAUGHT Point, the westernmost at the entrance of the Gulf of Cambay, to Mowah Point and Bay is 20 miles, the coast very clear one mile from the shore; the riding is bad in that bay, the bottom being all sandy from 7 to 10 fathoms, and with a flood tide you lie, with a dangerous reef of rocks, quite a stern.

From Mowah Point to SEARBETT ISLAND the coast runs 16 miles in a straight line; this is the only island on this coast except Diu; it has about 200 inhabitants and very good water. Vessels are sheltered there against both winds, and they might ride out the S. W. Monsoon by keeping well to the eastward, so that the island should nearly shut in the opening of the west channel: round the west end of the island is the only way in for a large vessel; at the east end it is all shoal water; but there is an excellent anchoring place from 4 to 10 fathoms, soft ground, under the north side of the

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rock, where you are sheltered from the westerly winds. This island is the receptacle of all the pirates on the coast, whom it supplies with grain and water.

JAFFRABAD is about 6 miles to the westward of Searbett Island, and has the best river of any on this coast, on account of its easy entrance; though it is shallow, vessels will receive no damage by lying in the soft mud at low water, as they are so well sheltered from all the winds; next to Diu this is the greatest place for trade on the coast of Guzurat.

From Jaffrabad to RADJAPOUR the distance is 13 miles; and 9 or 10 miles farther you come to DIU ISLAND, which belongs to the Portuguese. It is about $6\frac{1}{2}$ miles from East to West, and $1\frac{1}{2}$ from North to South: its town is defended by a castle well fortified: the inhabitants are obliged to drink rain water, and though the island is unfit for cultivation, they are plentifully supplied from the main with provisions of all kind. The water is so deep on the east side of the castle that a 74 gun ship might lie within 5 or 600 yards of the wall; so that she does not come too near a rock above water which joins with a line of rocks from the castle.

From the rock above water there is a bank to the eastward with breakers upon it at low water, but between is a good channel of 4 or 5 fathoms. Within this bank and rock you have the best anchoring ground from 5 to 3 fathoms.

The channel between the island and the main is only navigable at half tide for fishing boats; the western entrance having but 4 or 5 feet at low water on the bar; this entrance is defended by a square fort. To the westward of this channel, there is an excellent harbour against the westerly winds, with good soundings. DIU POINT, or *Diu Head*, forms the west side of this bay, and is the southern extremity of the coast, lying in $20^{\circ} 41' 42''$ latitude North; the land to the westward is low to the water side, but hilly in the country; the soundings are regular in shore, with a hard bottom. This coast of Guzurat we have been describing is bold, barren, and inhospitable; the soundings give you little or no warning of the distance from the shore; trees and the appearance of cultivation are very rare, and it is destitute of a good harbour where a ship might anchor with safety during a gale of wind.

From Diu Point the coast stretches to the N. W. about 46 leagues, as far as Gigat Point, where the Gulf of Cutch begins; this shore is of a moderate height, but mountainous in the country, and you have soundings, 36 fathoms, sand and shells, 7 or 8 leagues in the offing.

Twenty leagues S. by W. from Diu Point there is a *Bank of breakers* in about $19^{\circ} 50'$ latitude North, and about 3° West from Bombay, which was discovered in the *Mary*, 6th March, 1733.

THE MONSOONS, &c. ON THE WESTERN COAST,
OR MALABAR SIDE OF INDIA.

AFTER the full or change of the Moon, the latter end of October, or early in November, the fair weather sets in, and puts an end to the S. W. Monsoon, which is the bad and rainy season: it generally breaks up with thunder and lightning; and a storm comes in the south-east quarter, blowing violently for several hours with abundance of rain, then veers round the compass and moderates.

After the N. E. Monsoon, or fair weather, sets in, you may sail up and down this coast with great safety; the winds are from N. W. to N. E. not only without storms, but without squalls, or any uncertain weather; so that you can carry all your sails night or day, without apprehension. This weather, which is often unsettled in November, continues during December, January, February, and March, therefore they are the best season for navigating along the coast.

Every day about 12 o'clock, the wind comes from the sea, and is called sea breeze; it mostly blows from W. S. W. or West a pleasant gale, and veers round towards the evening to the northward.

Towards 6, 8 or 10 in the evening, sooner or later, the wind comes off the land, now and then after a short interval of a calm between the breezes. The land-winds are between N. E. and E. S. E. and sometimes but faint at their beginning, but they soon increase to a fine fresh gale, which continues till 9 or 10 A. M. next day, then they turn to light airs, or calm, till the sea-breezes set in. Observe that these land-winds begin to be faint and uncertain after the middle of February.

To make most of these alternate breezes, you are during the land-winds to get a good offing, at least into 30 fathoms, that you should take advantage of the sea-breeze: in that depth you will be soon 5 or 6 leagues off shore; but take care to be within 2 or 3 miles of the coast by 7 or 8 o'clock in the evening, before the land wind comes off. You may in most places stand in shore to 8, 10 or 12 fathoms; and if you find yourself near the land before the wind blows from it, you may either anchor or make a small trip, as there is no current at this season.

But if you should experience a current, great regard must be had to it, during a calm, between the change of breezes, or you may lose the advantage you have gained: in that case, should the current be against you, anchor with your small or coasting anchor, and wait for the breeze either from the land or the sea.

In March and April the sea breezes are stronger than in the four last months, and the land-winds are very faint, seldom coming off till morning: the sea-wind, or rather the N. W. wind, continues till then; land breezes are from N. E. to E. by N. and continue so short that little advantage is got by them; as you are obliged to stand right off shore to get an offing, in order to make most of the sea breeze: this generally comes on to the northward of West, soon veers round to N. W. and frequently light airs and calms. And it often happens that the sea-wind, with which you sometimes lie a tolerable flant along-shore, will induce you to stand on longer than intended; by which means you get close in shore, in hope of a spirt of land-wind to run off again, when you may find yourself deceived; indeed it may be said that during these months there are little or no land-winds. On the full and change, it blows very strong at N. W. with a large sea, and strong southerly current; therefore those who are determined to sail up this coast in the months of March and April, which is very tedious, ought to keep a very good offing: when they stand in shore in the evening with the sea-breeze (as the wind generally northerns in the evenings), instead of anchoring to wait for a land breeze, they ought to stand off again into 30, 35, or 40 fathoms, and there anchor, to be ready for the next day's sea-breeze; and as the winds abate about midnight, and continue fainting away till 10, 11, or 12 o'clock, the next day, when the sea-breeze comes on again, be sure always to anchor when it is little wind, on account of the southerly current, with generally a swell from the N. W.; by this method only you will gain ground, and keep what you have got.

In May the weather is very uncertain, the winds are variable, and the sky frequently very cloudy, which terminates in a slight shower of rain, with much lightning to the south-eastward. The wind during this month blows frequently from the South and S. W. and sometimes very strong, especially down the coast, to the southward of Tellicherry, where the Monsoon always sets in before it goes farther to the northward. It also sets in to the northward at Surat, and on that coast sooner than at Bombay: notwithstanding the uncertainty of the weather in May, the wind is mostly in the N. W. quarter, whence it frequently blows pretty fresh; then the weather is generally clear and fair. But when the wind is S. E. or South, or south westerly, which often happens, the sky is always overcast, &c. as if a tempest was coming on. Towards the latter end of this month, or early in June, if it happens to be the time of full, or change of the Moon, it will bring in the S. W. Monsoon and rainy weather, which generally commences with heavy clouds, loading the sky and threatening a storm. And indeed it comes on mostly in a violent storm from the S. E. with much thunder and lightning, a deluge of rain continual for several days, and a prodigious great sea constantly rolling upon the shore. During this month the weather is sultry hot, and almost intolerable, though not in an equal degree every year.

As the S. W. Monsoon sets in with strong gales from the S. E. the wind veers round to the South and south-westward, and indeed during this Monsoon it blows mostly between the S. W. and West: in the months of June and July the weather is so bad upon this coast, that the navigation is in some degree impracticable, owing to almost one continued tempest of wind and rain, with a great sea from the S. W. Though there are some intervals, when the rain ceases, as the winds moderate a little, and the Sun is seen, but they are generally of a very short duration, as well as their successive periods.

In August the Monsoon being more settled, and the winds more moderate, with longer intervals of fair weather, the ships who have wintered at Bombay depart thence for the coast of Coromandel, and other parts to the eastward, although in this month there is much rain, with many hard squalls, and frequent storms are much to be feared. The winds blow mostly from S. W. to West, but sometimes extend to W. by N. and W. N. W.

In September the weather is still fairer than in August: and you have often fair weather for several days together; but yet you are not free from the apprehension of storms, the sky being often overcast, and the horizon obscured with a thick haze. Sometimes you meet with heavy squalls, and much rain, with a large swell from the S. W. continually rolling in upon the shore, which in 9 or 10 fathoms, looks as if it was going to break; in some years you have heavy storms during this month. The winds are much the same as in August, from S. W. to West, and W. N. W.

In October the weather is like that in September, till the full and change of the Moon, when it becomes very precarious, the Monsoon generally changing the latter end of this month, or early in November, as the full or change happens. It always breaks up in a violent tempest of wind in the south-east quarter, with a deluge of rain, and much thunder and lightning. It is not to be understood, however, that the Monsoon changes precisely on the full or change of the Moon; it will happen perhaps 2, 3, 4 or 5 days before or after. After the Monsoon is changed, you have the finest weather, and temperature, with gentle gales and a smooth sea.

GENERAL DESCRIPTION
OF THE
WESTERN COAST OR MALABAR SIDE OF INDIA,
FROM BOMBAY TO CAPE COMORIN.

I. THE COAST OF CONCAN.

THIS coast extends from Basseen to Cape Ramas below Goa; but we begin at Tull Point, from which to CHOUL, that lies in $18^{\circ} 37'$ lat. North, and is remarkable by its high land, they reckon 5 leagues. Two leagues off Tull Point are the small islands of *Kennery*, and *Hennery*, and about 2 northward of Choul, is that of *Coolaba*; these three islands belong to the Mahrattah pirates. The fort of Choul is situated on a little eminence which may be seen 4 leagues off at sea, at the foot of which the town is built. They anchor right off it in 8 or 9 fathoms water; sailing along the coast you perceive several buildings, and within land many rugged mountains.

From Choul to RAJAPOUR, or *Dunda Rajapour*, belonging to the Siddee, the coast is clear of all danger, from 4 to 5 fathoms, within a mile of the shore; there are several small bays between these ports, but none of them deep enough to afford any shelter against a N. N. W. or S. W. wind. When you turn it along this coast, in standing on, come no nearer than 8 or 9 fathoms, because under that depth you may find danger in several places. At the entrance of Rajapour River lies the fortified Island of Gingerah.

From Rajapour Point to COMRAH BAY the coast lies nearly North and South, and above 5 fathoms has a clear bottom. The bay is very wide; there is good shelter against a N. W. wind, and vessels may ride very safe, in 4 or 5 fathoms, within 500 yards of the shore; but its south end has not so convenient a bight for shelter against the southerly winds.

There is no danger from this Bay to Bancoot above 5 fathoms: to the northward of Bancoot is a small Bay called *Severndon*.

BANCOOT RIVER, which cannot be entered without a pilot, lies in $17^{\circ} 17'$ lat. North, and upon the south side of the entrance of this river stands the English fort called *Victoria*. The land about Bancoot may be easily known from the offing at a great distance; the interior part forms a flat of considerable length; but at the distance of 6, 7, or 8 leagues, *Harriffa* at the entrance is very conspicuous, being a round hill when

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to the southward of it, and it appears a shade darker than the other land. A league and a half to the southward of the fort is the village of Kelsey, with two remarkable Brab-trees, which make the mark for Bancoot Bar.

From Bancoot River to Severndroog the coast is all clear above 5 fathoms; under that depth there are a few patches of hard ground, just to the southward of Bancoot Bar, having 3 fathoms upon them.

SEVERNDROOG FORT stands upon an island 4 leagues from Bancoot, and chained to the shore by a line of rocks, which forms a little snug bay for vessels to lie under the south of it. On the coast opposite to Severndroog Island is the town of DABUL.

From this bay to ANGENWEEL RIVER and Fort, it is about $4\frac{1}{2}$ leagues; and 6 leagues further South, lies the Fort of ZYGHUR at the bottom of Boria Bay. The land here-about shews in a number of bluff points, especially Boria * Point, which is steep to: the bay is near 2 miles deep and 6 wide, clear of all danger, except close in, opposite to the fort, where there are a reef of rocks extending about $\frac{1}{2}$ a mile from the shore. The bar of the river has $2\frac{1}{2}$ fathoms on it at low water.

Between Zyghur and Rattney Garie to the southward, at 14 miles distance, you have regular soundings from 9 to 7 fathoms, all along and within a mile of the shore. RATTNEY GARIE is a neck of land fortified all over, and at some distance from the land appearing like 2 separate islands. To the northward of it is a cape which makes like an island, coming from the North or the South; even from the West it shews different in colour from the other land, being much lighter. Behind this cape, to the northward, is an excellent bay and shelter from southerly winds; and between it and Rattney Garie another bay about $1\frac{1}{2}$ mile broad, and 2 miles deep, with 5 and 6 fathoms water, sandy bottom. Eight miles to the southward is a small bay, between which and Rattney Garie stands a remarkable banyan-tree on the brow of one of the hills near the sea.

FORT RADJAPOUR, to the southward of this small bay, lies in $16^{\circ} 45'$ latitude North; it stands upon a barren hill, at the north side of a river which trends to north-eastward, and on the south side you perceive a remarkable white pagoda: the hills on the South of the river are very woody.

* It lies in about $17^{\circ} 24'$ latitude North: this must be the headland called *Cape Dobbs* in the Charts.

Lieutenant *McCluer* has taken no notice of Cape Z or ZYD between Severndroog and Angenweel. It is described as follows in the *New Directory's* Remarks, p. 108. "From Cape Dobbs the coast lies N. N. W. 5 leagues, to Cape Z in latitude $17^{\circ} 37'$ North, the Variation, 1762, was 44 min. West. This is a high, steep, red head-land, lying out a small distance into the sea. It appears very white when the Sun shines on it, which, with its being high and steep makes it very remarkable. Between these capes the coast is high and bold to; and there are several openings, like the entrance into the rivers or harbours; and when near the shore, you may see several Indian fortifications, which I can give no particular description of; but am well assured that the coast is clear of all danger. I (Mr. *Nicholson*) have coasted it several times inshore. You may stand in to 8 or 9 fathoms with safety, $1\frac{1}{2}$ or 2 miles off shore; and you may coast it along in 11, 12, or 13 fathoms from 2 to 3 leagues off shore. You have from 17 to 20 fathoms, 4 or 5 leagues off; and 25 to 30 fathoms, 6 or 7 leagues off shore; sand, mud, and ooze."

(GHERIAH, or *Gariab*, lies 5 leagues due South from Radjapour; the coast between is pretty high and clear of danger; you may coast it along from 14 to 16 and 17 fathoms, from 4 to 6 miles off shore. You have from 20 to 25 fathoms, with an offing of 4 or 5 leagues; and from 25 to 30 and 35 fathoms at 6, 7 and 8 leagues off the coast, muddy ground. The latitude of Gheriah town and fort is $16^{\circ} 32'$: when the flag staff, which is very high, and may be seen a great way off, bears E. by S. 2 or 3 miles, you have 11 or 12 fathoms; E. $\frac{1}{2}$ S. 6 or 7 miles $15\frac{1}{2}$ or 16 fathoms; from E. by N. to E. by S. $3\frac{1}{2}$ leagues, 20 fathoms; and with the same bearings 6 or 7 leagues, from 30 to 33 fathoms, oozy ground*.

From Gheriah to Dewghur, in $16^{\circ} 23'$ latitude North, the distance is 10 or 11 miles S. by E. easterly; the coast steep to; 8 or 9 fathoms within $\frac{1}{2}$ a mile of it, and quite clear of danger. DEWGHUR FORT stands on a high hill, in an island at the southern entrance of a beautiful river, which, according to report, runs above 100 miles up the country. There is no apparent bar to this river, and, by keeping the southern shore on board, you have regular soundings, 4 or 5 fathoms, into the back of the point, and within the fort there is appearance of an excellent harbour. From the north point of the river, a dangerous rocky reef runs off to the S. W. therefore coming from the northward, do not stand under 7 fathoms till the river is entirely open, then steer for the southern point.

"The harbour of Dewghur," says Mr. *Archibald Blair*, "bears from the westernmost Vingorla rocks nearly N. $\frac{1}{2}$ W. about 6 leagues: it is so easy of access, I think it might be of service, in case of ships falling to leeward in the S. W. Monsoon, so much as not to be able to weather the Vingorla rocks; they might by going on the other tack, fetch this port, or keep it open till they have gained an offing: you anchor in 4 fathoms, $1\frac{1}{2}$ of a mile to the eastward of the fort."

About 21 miles S. by E. from Dewghur, stand the island and fort of MELUNDY, to the southward of which are a number of rocks above water. Between these two places, in lat. $16^{\circ} 11'$, is the entrance of *Atchera* river, whose land on the north side is the

* *ANGRIA'S BANK* lies opposite to this part of the coast, at about 12 leagues distance. "Having set Gariab flag-staff, and the adjacent points," says Lieutenant *McCluer*, "stood off the land with a determination to traverse Angria's Bank. From the latitude $16^{\circ} 40'$ North, stood off nearly a W. $\frac{1}{2}$ S. course, and sounded regularly every hour, till soundings were lost, which is 66 miles from the land: fell in with Angria's Bank, first cast 13 fathoms, stood across due West, and found its breadth here to be about 10 miles. We crossed it in latitude $16^{\circ} 30'$ North, and endeavoured to traverse to the north end of it, but the winds and irregularities of the currents kept us three days in the same latitude. We found the Bank did not exceed $16^{\circ} 38'$ North by crossing the head of it in that latitude." Upon this description Mr. *Dabrymple* has made the following observation: "Some manuscript soundings describe a Bank from $13\frac{1}{2}$ fathoms in lat. $16^{\circ} 27'$ North, to $17\frac{1}{2}$ in lat. $16^{\circ} 51'$ North, which do not correspond with Lieutenant *McCluer's* description of Angria's Bank: Commodore *Watson's Directory* had also, in manuscript, a large Bank, called the *Gariab Bank*, extending from 16° North, to $17^{\circ} 30'$ North, which was described to have on some places only 4 fathoms, and on some places 15 and 20, sand and coral rocks. This includes the *Elizabeth Bank*."

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highest tide, and may be known by a remarkable white pagoda; this river is navigable only for small vessels. Melundy, called also *Makwan*, is inhabited by pirates, who will plunder any ship that is defenceless: it cannot be perceived at any great distance from the coast; and the island can only be distinguished coming from the northward or southward. About 3 miles to the North of it there is a small rocky island, lying about a mile from the main, which affords no shelter for anchorage, being chained to the coast by rocky irregular ground. From this island northward, is a straight sandy beach, clear of danger into 5 fathoms, which depth is one mile off.

NEWTEE FORT, which lies 7 or 8 miles to the southward of Melundy, is what is taken by most people for Vingorla. It stands on a point of land, projecting to the South, in $15^{\circ} 56'$ north latitude, and to the S. W. of it is the south range of the *Barren or Burnt Islands*, by English navigators commonly called VINGORLA ROCKS. These have a good channel between them and the point, with a good road for vessels working up the coast: the southern range of the Vingorla Rocks appears to be chained by a reef; there are about 20 in sight, several of which are just a-wash at high water; they lie nearly in a direction North and South, and may be seen about 5 leagues from a ship's deck. I have passed, says Mr. *Nichelson*, within 2 or 3 miles of these rocks in $17\frac{1}{2}$ fathoms, and when they bore East 5 or 6 miles, I have had 18 fathoms, by which I imagine they are steep to. You have from 30 to 35 fathoms, oozy ground, 5 leagues off, when they can but just be seen from the poop of a large ship. It is advisable, when passing these rocks in the night or hazy weather, not to go under 20 fathoms, which will carry you $2\frac{1}{2}$ or 3 leagues without them. In the road to the southward of Vingorla Rocks, a ship may anchor in 12, 13, and 14 fathoms, clear muddy ground, by bringing the outermost rock to W. N. W. or W. by N. and the extremes of the land to the southward, to bear S. E. The adjacent coast, like that of Melundy, is inhabited by pirates, and ships of small force must avoid coming near this place.

From Newtee Point to RAREE, the coast runs S. S. E. nearly, about 15 miles; it is a regular sandy beach, and good soundings all the way, within a mile of it. Raree is a well built fort on an eminence, and very conspicuous from the sea. To the westward of this fort is a long rocky point with many rocks above water; two in particular lie to the S. W. of it, above a mile from the shore: these rocks are in the line of 7 fathoms, and it is here necessary not to come under 10 in the night. To the northward of this place is a small river navigable for boats.

From Raree to the Bluff Point of the Agoada, at the entrance of Goa, they reckon 15 miles in a south direction. Along this coast are the two forts of *Cbiracole* and *Chapra*; the first standing off the brow of a hill does not shew itself at any distance in the offing; the other is better seen, being situated on a high bluff point, to the northward of which is a small river, and the land about it being hilly to seaward: both belong to the Portuguese, who seldom shew any colours at these forts.

DESCRIPTION OF THE LAND OF GOA,

BY THE HONOURABLE THOMAS HOWE.

DIRECTIONS FOR THE BAR AND HARBOUR OF GOA,
AND FOR MURMUGAON.

GOA is the capital of the Portuguese settlements in India, and the residence of the Viceroy; this place is too well known to require a farther description, which besides would be nowise conducive to the object we have in view.

"The shore (of Goa) from the *Bluff Point of the Agoada* to 2 or 3 miles northward is sandy; on the top of Agoada Point is a fort of brown stone, with a Light-house in the center, at which however no light is shewn, except when any Portuguese ships are expected from Europe*. The point of *Nossa Senhora do Cabo*, about 3 miles to the eastward of Agoada, is bluff, and appears covered with trees surrounding a large white building, visible at a considerable distance, which is the convent from whence the point takes its name. The foot of the point is inclosed on the west side by an old fortification of brown stone; off the point lie some rocks mostly above water."

"MURMUGAON POINT, about 7 miles to the southward of the Agoada, is a long level land, nearly of the same height as that of the Agoada, and *Nossa Senhora do Cabo*: on the north-west part of it are some fortifications, to the westward of which appears to be a good road; we saw two large Portuguese ships lying there.

"The north-eastmost and Middle Islands of *St. George* are level, and not high; the South-westernmost rises to a point like a sugar-loaf, the summit of which is rather higher than the other two islands. Part of the Gatta mountains (the Gauts) lying behind all this land of Goa, hinders it from being distinguished at a great distance.

"The anchoring place in GOA ROAD is in $4\frac{1}{2}$ fathoms, at low water of spring tides, about $\frac{1}{2}$ a mile to the southward of the Agoada Fort, which stands at the foot of the

* Mr. Nicholson says that the light is kept during the S. W. Monsoon.

south-eastmost part of the Agoada Point; the ground is deep mud. There are some rocks round the foot of the Agoada Point, but mostly above water.

"The watering places are at the pier of the Agoada Fort, and at a convent close round Castle Point, which is up Goa inlet, about 3 miles from the Agoada Fort, on the north side.

"The latitude of the Agoada Fort, by two observations with my sea-quadrant, concludes the Honourable Thomas Howe, is $15^{\circ} 28' 20''$ North."

"From the Agoada anchoring ground," says Lieutenant *McCluer*, "we stood round the Monastery reef, and the wind being from the land, traversed between the *Outer St. George's Island*, and the main, but had chiefly hard ground in that channel, and found it very unsafe for large ships, as there are several detached rocks from the outer island, one in particular just covered at high water. About $\frac{1}{2}$ of a mile to S. E. of the outer island is a channel between them, with 8 or 9 fathoms water: to the eastward of these islands is an excellent bight where ships may ride out a hard North-wester, the bottom is clear and regular to within $\frac{1}{2}$ a mile of the shore."

If lying at the Agoada, adds a third navigator, you are bound into the river, get under weigh at half-flood, and stand to the southward, till you bring a single black bush that lies on the hill back of Pangim, in one with the Flag-staff of the Black Fort, and steer away directly with those marks in one, till you strike the outer bar; you will have from $3\frac{1}{2}$ to 4 fathoms, hard rock, and be entering between the breakers, at which time edge over to the north breakers, till you bring the high bushes, on the south part of Pangim back hill, directly over the Flag-staff of the aforesaid fort; and then run directly in with the same fort, till you bring the church at the back of the Fort dos Reyes, open with the Fort Point; which being done you run close along by the shore, till you come within a cable's length of the fishing stakes, and then haul over for the church before mentioned, getting close over on that shore, and standing along by it till you open the town of Rebenda, or Ribandar, with Pangim Point; at which time you must haul directly over for a cross on the north shore of the entrance of the river; and when past the said cross, you may come on either side below Pangim.

N. B. There are three bars, going into Goa, all hard rock, about a cable's length or more, distant from each other, between which you will have a fathom more water than on each bar, and soft mud; the inner bar is shoaler than the other about a foot, and there are, at high spring tides, 4 fathoms on the innermost.

The tide flows at Goa, on full and change days, at half past 4 o'clock, but always sets out of the river; it ebbs and flows regularly about 6 feet perpendicular, by the shore. In the bay there is a kind of still water, for the tide has no apparent motion while it is flowing, which is about 4 hours; and from the time of high water it sets pretty strong out of the bay for 7 or 8 hours.

In coming from the sea to MURMUGAON, get midway between Murmugaon Point and the point of the White Convent; and keep mid-channel, running up till you bring Murmugaon town entirely open with the fort, at which time you may haul over for the fort, in any depth of water you please, soft mud.

N.B. The danger going in is two rocks about mid-way, which always break; you may go between them, or on either side, as they are steep to.

CAPE RAMAS, the southern extremity of the Portuguese districts, lies about $7\frac{1}{2}$ leagues S. by E. from Murmugaon Point, the land between being low and woody near the sea, and rising into mountains at some distance from it. To seaward is a straight regular sandy beach, clear bottom, to within a mile of the shore. The cape is a high land, on the western point of which stands a small Portuguese fort; this bluff is very steep to, and $\frac{1}{2}$ of a mile off, you round it in 9 fathoms, soft ground; here is good shelter from northerly winds, for ships working up the coast. The cape is very remarkable, forming, from the northward and southward, in such a manner that the false cape, which is the highest, is always seen before the true cape.

When from this cape you are bound into Goa, you must give a good birth to St. George's Islands (called also Serpents Islands); there is a passage between them, with 4 fathoms water, nevertheless it is more advisable to sail without all these islands; and in the night you ought to be upon your guard, because of the currents, occasioned by the ebbing and flowing of the river, which might alter the direction.

II. THE COAST OF CANARA.

THIS coast extends from Cape Ramas to Declah, 8 or 9 leagues to the North of Mount Dilly.

From Cape Ramas to Carwar Bay the coast is curving, forming several bays, but not of any consideration, as they will not afford shelter to shipping. CARWAR BAY is very little known; it is near 8 miles broad, and at the south end of it are the *Ducky* or *Oyster Rocks*, within which a ship may ride safe against a southerly wind; on the south part of the bay you find a cove where, it is said, a man of war hove down in ancient times. Sudashtgur, the fort of Carwar, is situated on a high point of land, and being remarkably white, becomes very conspicuous at sea. When that fort and the Ducky rocks are in one E. N. E. $\frac{1}{2}$ E. distance from the land 3 leagues, from the rocks 7 or 8 miles, and Cape Ramas N. $\frac{1}{2}$ W. you have 16 and 17 fathoms; $3\frac{1}{2}$ or 4 leagues off the shore the same depth is found, and at 5 and 7 leagues, you have from 25 to 30 fathoms: between these rocks and Cape Ramas the depth is 14, 15, and 16 fathoms, from 5 to 7 miles off shore.

ANJR

ANJE DIVA island lies to the southward of Carwar Head; it is about a mile in length, but not so broad, with a fortification towards the main garrisoned with poor wretches who are transported from Goa; the passage between it and the main is clear, and no danger but what can be seen.

From Anje Diva to MERJEE RIVER the distance is about 16 miles S. by E. $\frac{1}{4}$ E. You may see the entrance of this river between two bluff points, one to the northward, the other to the southward, which is the highest and defended by a redoubt, near which is a cluster of fine green trees that makes it very remarkable: just within this south point, on the side of the hill, stands a small square fort, which cannot be seen at a great distance, as it is built of brown stone. In the entrance of the river lies a large sand bank, that always discovers itself, more or less, by the seas breaking on it. To go into the said river you must keep near between the point, under the square fort and the edge of the sand bank; and after you have passed the bank you may keep over to the north shore, and go up the river at pleasure. It belongs now, as well as all the coast between Cape Ramas and Mount Dilly, to Sultan Tippoo Sahib. Captain *William Brereton* who was there, and from whose description the above detail is taken, observes that at Anjengo, Cochin, Tellichery, and Onore, ships are obliged to have their water brought off in the country boats, which makes watering both expensive and tedious; "I would therefore," says this gentleman, "recommend it to ships to call in at Merjee River, where we watered in April 1761. Upon the northern side of this river, on the hill, you may cut good and large fire wood; and rice may be bought in great quantities. Fresh water is to be had also in great plenty, extremely soft and good, and with the greatest ease as you do not go into the river; the watering place is in a very fine sandy cove just within the north point of the westernmost part of the bay, where your own boats may land, and roll your cask upon the sand to a low stone wall, about 1 foot high, over which you may dip your buckets into the pool of fresh water, where a fleet of 20 sails of the line may water in 2 or 3 days.

"The most convenient situation for a ship to anchor is near the northmost shore in 5 or 6 fathoms: the north bluff N. E. distant 1 mile; Fortified Island (near Onore), and the southmost extreme of the land in one, S. by E. $\frac{1}{4}$ E. the north extreme N. W. $\frac{1}{4}$ W. we founded in the river from the ship, at half ebb, and had no less than 4 $\frac{1}{2}$ fathoms, within half a cable's length from the point where the Moors fort stands, and at a cable's length from it, on the bar, we had 6 $\frac{1}{2}$ fathoms: after we were over the bar, the water increased to 7 fathoms, which we carried all the way till we came opposite to the Choultry: so that if there was occasion a ship might enter the river, but it would be necessary to send a boat first to sound the bar. The ships took in from this place about 8000 robins of rice, each robin weighing 100 weight."

PIGEON ISLAND lies 9 leagues due South nearly, from the entrance of Merjee River, and about 4 leagues from the Continent. It is a small, round island, which being very high,

high, may be seen 9 or 10 leagues off in clear weather: a little islot or rock appears to the south-eastward, and another to the eastward of it. About 9 or 10 miles to the East of Pigeon Island, lies another called HOG ISLAND, smaller and higher, with a peak much like the top of a sugar-loaf; this lies near the main land, which hereabout is very mountainous, with several islots near it, but has gradual soundings towards them, of 8 and 9 fathoms: you may with safety go between Pigeon and Hog-Islands. "I have gone this passage several times," says Mr. *Nicholson*, "when bound to Ananore (Onore); you have from 16 or 17 fathoms, mid-channel, to 11, 10 or 9 fathoms, on the continent side when to the northward of Hog Island you may coast it along to Ananore road in 8, 9 or 7 fathoms, 3 or 4 miles off shore, without danger.—In the stream of Pigeon Island, you find 20 and 21 fathoms. I have passed without this island several times, 3 or 4 miles off, when it bore from E. by S. to E. by N. and had 24, $24\frac{1}{2}$, and 25 fathoms: in the night, or hazy weather, a ship should not come nearer than this depth. You will have 30, 32, or 34 fathoms 3 or 4 leagues without it, when you are 6 or 7 leagues off shore, regular soundings, sand and ooze."

ONORE, improperly called *Ananore*, lies upon the coast half way between Merjee River and Pigeon Island: you may anchor in the road on soft muddy ground from 5 to 6 fathoms, off shore $1\frac{1}{2}$ or 2 miles; the flag-staff bearing E. by N. or E. N. E. Fortified Island N. by W. and Pigeon Island S. by W. $3\frac{1}{2}$ or 4 leagues. *Fortified Island* is a high green island, level at the top, about $1\frac{1}{2}$ mile to the northward of Onore, and very near the continent; it is remarkable by its Indian fortifications. Onore is a considerable town, situated at the mouth of a salt river; it produces great quantities of rice and pepper; and formerly the English had there a factory.

From Onore to Mangalore the coast lies S. by E. and some degrees East, distance 31 leagues; it is very high all the way; but close to the sea, low and woody, with regular soundings towards the shore. About 14 leagues to the southward of Onore you meet with the entrance of BARCELORE, at the back of which is a remarkable peak called *Barcelore Peak*; and 6 leagues to the South of this entrance lie St. Mary's Rocks: these are several little islots, some of which are as high as the hull of a small vessel, others low and flat; they lie $2\frac{1}{2}$ leagues off the shore, and may be seen at 3 or $3\frac{1}{2}$ from the ship's deck: you have $15\frac{1}{2}$ or 16 fathoms without them. It is not advisable to come nearer these rocks than 16 fathoms, and in the night, or hazy weather, than 17 or 18, in which depth you will pass them at 4 or 5 miles distance; at 6, 7 or 8 miles you have 21, 22, and 23 fathoms water, and are then 5 or 6 leagues off shore.

The PERMEIRA ROCKS bear S. S. E. 4 or 5 leagues from St. Mary's Rocks, and lie 3 or $3\frac{1}{2}$ from the coast: they are likewise as high as a small ship's hull out of water, and may be seen from the deck at 4 leagues distance. You are not to come nearer them than 18 fathoms in the night. "I have sounded well about these rocks," says the judicious

cious Mr. *Nichelson*, "and have passed them in $16\frac{1}{2}$, $16\frac{1}{2}$, 16 and $15\frac{1}{2}$ fathoms, at 2 or 3 miles distance without, and you will have no less water close to them; the soundings are regular and even, sand and ooze." Without these rocks you have 17 fathoms at 3 miles; $18\frac{1}{2}$ at 4 miles; and 20 or 21 at 5 or 6 miles, being then 5 or 6 leagues off the coast.

MANGALORE is situated at the mouth of a river which has a bar, and is navigable only for small vessels; the anchorage in the road is opposite the river in 5, 6, or 7 fathoms, muddy ground.

From Mangalore to DECLAH, where the coast of Malabar begins, the shore runs to the S. by E. above 8 leagues, being low and woody, as well as clear of all danger. About 4 leagues to the N. E. of Declah there is a long, high, sloping mount called *Barn-hill*, with several others farther inland. Mangalore bearing E. $\frac{1}{2}$ N: and Barn-hill E. S. E. off shore $4\frac{1}{2}$ and 5 leagues, your depth will be 21 or 22 fathoms; Barn-hill E. by S. $\frac{1}{2}$ S. with Mangalore East, and an offing of 6 leagues, you will have 30 fathoms, sand and ooze.

III. THE COAST OF MALABAR.

THIS coast, as we have observed, begins at Declah and ends at Cape Comorin.— From Declah to Mount Dilly they reckon about 8 leagues N. by W. $\frac{1}{2}$ W. The coast being low woody, and clear of all danger. About 5 leagues to the northward of Mount Dilly is *Mount Formoso*, so called by the Portuguese from its beautiful appearance; and 6 leagues to the northward of it is seen *Barn-hill*; you may stand in shore on 7 or 8 fathoms with safety, and coast it in 9 or 10 fathoms, at 5 or 6 miles distance.

MOUNT DILLY or *Mount Dilla*, in lat. $12^{\circ} 2'$, is a high mountain lying E. N. E. and W. S. W. forming a point of land which projects into the sea, and may be seen 9 or 10 leagues off in a clear day. As you come from the northward, or southward, it appears detached from the coast; and the surrounding land being very low, and only distinguishable by trees, renders this mount and its point very remarkable to navigators.

From Mount Dilly to TELlichERY, the principal English settlement on the Malabar Coast, the course is S. E. $\frac{1}{2}$ S. distance about $7\frac{1}{2}$ leagues; with a low and woody shore, and high mountains within the land; you may coast it in a depth from 10 to 15 fathoms, at a distance from 4 to 6 miles. But off the mount in 14 or 15 fathoms, your distance will be only 3 or 4 miles. The soundings are very regular. In the offing between Tellicherry and Mount Dilly, you have between 20 and 26 fathoms, oozy ground, from 4 to 5 leagues, and between 25 and 35 fathoms, from 5 to 7 leagues off shore. When Mount

Mount Dilly bears from E. by N. to S. E. by E. distant 6 or 7 leagues, you have 31, 32, and 33 fathoms, sandy ground. Observe also that the coast from the Mount to Tellicherry is clear of all danger in 5 fathoms, near the shore, and that a ship may range it along in that depth without fear.

You may anchor at Tellicherry in $5\frac{1}{2}$, or 6 fathoms, the Flag-staff bearing N. E. by N. Green Island, which is pretty high, and covered with trees, N. by W. $\frac{1}{2}$ W. off shore $1\frac{1}{2}$ or $1\frac{3}{4}$ mile. There are several great rocks to the northward of the town, but no danger, as they lie close to the shore. Here may be had good fresh water and other refreshments.

About 10 miles to the northward of Tellicherry, lies the Dutch factory of *Cananore*, and 6 miles to the southward of the former place, the French factory of MAHÉ, near the mouth of a small river navigable only for country vessels. The best anchoring in Mahé Road, in fine weather, is in 5 or 6 fathoms, the Flag-staff E. by N. or E. by N. $\frac{1}{4}$ N. $1\frac{1}{2}$ or 2 miles off shore.

They reckon about 12 leagues S. E. by S. nearly, from Tellicherry to Calicut road; the coast is low and very woody with several small rivers and villages: between these two places lies the SACRIFICE ROCK, called by the natives *Cugnali Island*. This rock stands about 6 miles from the shore, and Cotta Point is bearing from it South 77° E. it bears from Tellicherry Flag-staff about South 6° E. It is as high as a large ship's hull out of the water, steep to on all sides, and very white, being covered all over with birds dung. It was on the reefs near POINT COTTA that the *Prudence* and *Union* ordnance store ships struck, and were both wrecked the 20th May 1782. Driven out of Calicut Road in a storm of wind, on the setting in of the S. W. Monsoon, the gale continued at S. W. and S. W. by W. and they were not able to weather the point.

The passage between Sacrifice Rock and the main is very good, having no less than 8 fathoms, clear ground, in mid-channel, and by going within the rock you make a shorter cut to Calicut.

From Tellicherry to Sacrifice Rock the course is S. $\frac{1}{2}$ E. distant above 6 leagues; being in 17 fathoms; $1\frac{1}{2}$ or 2 miles without the rock, you will have very regular soundings from this depth to $5\frac{1}{2}$ fathoms, oozy ground.

From the Sacrifice Rock to Calicut the course is S. E. by E. about 6 leagues. CALICUT was formerly the residence of the Zamorin; and a great trade is still carried on there for pepper, cardamoms, timber, &c. by the English, French, Danes, and Portuguese. Its latitude is $11^{\circ} 17'$ lat. North. It is not quite seen at first, as it lies in a little bay; you see only to the northward of it 3 white pyramids which are called the *Tombs*; another mark equally useful, is a little hill upon the land, detached from the rest, which resemble two paps; this is more southerly than Calicut; but when you come from the southward, it appears to the northward of that town. In the road of

Calicut

Calicut West of the English factory lies a rocky bank, upon which you must avoid anchoring, lest you should lose your anchor there; at a little distance there is no danger: small vessels may anchor between the shore and bank; but for large ships the best anchorage is in $6\frac{1}{2}$ or 5 fathoms, soft muddy ground, off shore about 2 miles, and the tombs bearing E. N. E. or E. N. E. $\frac{1}{4}$ N. When Calicut bears East about 6 miles, you have 15 or 16 fathoms; and when the English flag-staff is bearing N. E. by E. about 2 miles, there is a shoal with $\frac{1}{4}$ less 3 fathoms, hard rocky ground, which stretches N. N. W. and S. S. E. about a large $\frac{1}{4}$ of a mile, with a breadth of little more than 2 ships lengths, and having 5 fathoms just without.

The coast from Calicut to Cochin lies S. S. E. a little southerly, in an extent of about 28 leagues: the land near the sea is low and woody, but clear of danger; you may range it along in 8, 9, or 10 fathoms, muddy ground, at the distance of $2\frac{1}{2}$ or 3 miles, to 12, 13, and 15 fathoms, from 4 to 5 and 6 leagues off shore. PANIANY, where the Dutch have a factory, lies 14 or 15 leagues from Calicut; about half way between the two you see TANORE, and $3\frac{1}{2}$ leagues to the northward of this, the entrance of BEYPOUR river, which is frequented by the country vessels. To the North of Paniany there is a river larger than that of Beypour, by which the pepper is brought, but which will admit only very small vessels.

A very small shoal, with 4 fathoms water on it, lies near the Dutch factory at Paniany, about 4 miles off shore; within this shoal you have $6\frac{1}{2}$ and 6 fathoms, at $1\frac{1}{2}$ mile from the coast; without it, $9\frac{1}{2}$ or 10 fathoms, muddy ground, a mile off, and 14 fathoms at 1 mile $\frac{1}{2}$ or 2 miles distance: therefore large ships ought to keep out in 13 or 14 fathoms hereabouts.

From Paniany to CRANGANORE, another Dutch factory, they reckon about 9 leagues S. by E. the land is low and swampy along shore, and only perceivable by the trees; but inland there are very high mountains, making part of that chain called THE GAUTS, which extend parallel to the whole coast, and begin at Cape * Comorin. To the eastward of Cranganore are seen two peaks on the tops of these mountains which appear like the ears of a hare when you are abreast of them.

As you sail along this coast you can scarcely see the town of COCHIN, especially if you come from the southward, the trees almost hiding it; you only perceive the trees, and the flag which is hoisted upon a high tower. This town is the chief settlement of the Dutch upon the Coast of Malabar; it is encompassed with a good brick wall fortified with bastions. The river at the mouth of which it stands, is very deep with-

* There is a remarkable interruption in the continuity of this chain of the Gauts, opposite to Paniany. The break is about 16 miles wide. It is well known that ships which navigate the Malabar Coast during the N. E. Monsoon, commonly experience a stronger gale in the neighbourhood of Paniany than elsewhere; we may suppose that this opening in the Gauts, is a very sufficient cause for such an effect.

in the bar; they build ships there from 200 to 300 tons: this river may be considered as an arm of the sea, which forms one great island and many small ones within the land; its entrance lies between two reefs, that extend along the coast North and South, and project about a mile into the sea.

If you would go to the town in a boat or canoe, to know the right channel, steer toward the starboard point going in; and when you are near the shoals, turn short to the larboard, then go between the two reefs; as soon as you approach the shore, and have doubled the starboard point, steer by one of the gates of the town, where there is a pier to land on. You may anchor in Cochin, the flag-staff bearing E. N. E. or E. N. E. $\frac{1}{4}$ N.

"The bar of Cochin," says Lieutenant *McCluer*, "is navigable for ships drawing 14 or 15 feet water; the channel in, is to keep close to the northern shore and breakers, steering direct for the Portuguese church, which stands on the north side of the river. There is seldom more than 6 feet difference in the rise and fall of the tides here: the ebb upon the bar is very strong, and runs longer than the flood; so it is uncommon for any vessel to get over the bar but with a sea-wind."

Being in the offing any where about Cochin 6 or 8 leagues to the northward or southward of it, you will but just see the land off deck, in 22 or 23 fathoms, or about 6 leagues from it. You have 16 fathoms 3 leagues off, with gradual soundings to the shore; muddy ground.

From Cochin to Anjengo the coast lies S. S. E. $\frac{1}{2}$ E. in a length of 27 or 28 leagues, the bank of soundings, soft ground, in that interval extends from 9 to 10 leagues off shore. Fifteen leagues southward of Cochin is *PORKAH* another Dutch settlement. This part is the shoalest of the Coast of Malabar, beginning even at Paniany, but no danger, there being gradual soundings to the shore; you have 6 or 7 fathoms $1\frac{1}{2}$ or 2 miles off; and 12 or 14 fathoms at 3 or $3\frac{1}{2}$ leagues distance: all the coast is very low, and only to be discerned by the trees with which it is covered.

About 6 leagues to the northward of Ajengo lies *Coulan*, or *QUILON*, a small Dutch factory; it is known by its flag and the several tall trees that appear above the fort, which is encompassed with high white walls. The road is opposite the fort, and before that fort is a reef of rocks that may be avoided by coming no nearer the shore than 12 fathoms. It is also unsafe to approach Quilon Point nearer than 12 fathoms; for under that depth there are overfalls, and hard ground, upon which you come suddenly from 9 to 4 or 3 fathoms.

Three miles to the northward of Quilon lies the entrance called *Little Ayvicca* by the Portuguese, and *Iviker* river or inlet by the English, which communicates with Cochin River: its bar is navigable only for the flat bottom country boats, there being but 5 or 6 feet on it at high water. On the outside of the bar is a swatch of soft ground, with only 3 fathoms water, and without this a red gravelly bottom out to 9 fathoms, which runs below Quilon.

Four miles to the northward of Anjengo are the *Red Cliffs*, which are pretty high and steep, close to the sea; there you may get fresh water; but there being always a great surf on the shore, the watering becomes tedious.

ANJENGO, an English settlement in the kingdom of Travancore, lies, according to Lieutenant *McCluer*, in $8^{\circ} 39' 20''$, latitude North, and in $77^{\circ} 2' 13''$ east longitude from Greenwich.

It is rather a difficult matter for a stranger to distinguish Ajengo from any considerable distance off shore, the land to seaward being low and woody. In clear weather there is a good mark by which it may be known; viz. about 8 leagues within Anjengo, is a very remarkable peak, higher than any of the back-land, which, when it is in one with the fort, bears E. 4° S. This peak is perceivable to the southward of Cape Comorin, and may be a guide along the coast, till past Quilon.

The anchoring ground off Anjengo, under 10 fathoms, is sandy, but above that depth, you have mud; it is best to anchor with the fort bearing E. N. E. or N. E. by E. on account of the fresh sea-winds, which very much retard the progress of the Tonies, going to vessels which lie more northerly. Observe that the water at Anjengo is both bad and scarce.

From Anjengo to Ruttera Point the course is S. by E. $\frac{1}{2}$ E. about 5 leagues; the coast between them is low to seaward, but covered with trees, which makes it discernible at a pretty good distance. There are high mountains a great way inland, and many buildings along the coast: this coast is bold and clear, having 11 or 12 fathoms within $1\frac{1}{2}$ mile, 24 or 25 within 2 or 3 leagues, and from 30 to 45 fathoms within 4 and 6 leagues in the offing.

RUTTERA POINT, a low level land which terminates in a bluff to seaward, is higher than any land hereabouts: near the sea there is a church a little to the southward of this point, and several buildings are along shore by which the point may be known.

It may not be amiss to observe here, with Mr. *Nichelson*, who has several times experienced it, that the western coast of India lying N. N. W. and S. S. E. when you are 5 leagues off Ruttera Point, a N. N. W. course will carry you along shore to the Island Kennery, a little to the southward of Bombay, and as far without it as you were from Ruttera Point; and a S. S. E. course from Kennery will carry you the same distance off Ruttera Point.

From Ruttera Point to Cadiapatam Point the course is S. E. $\frac{1}{2}$ E. 10 or 11 leagues; they reckon about 4 leagues E. S. E. from Ruttera Point to POINT VENIAM, known by its high steep land on the north side, and its red cliffs on the south side of it; half way between the two lies the small Island of *Enciam* with a Portuguese church: to the northward of Enciam are the river and town of Tegapatam or Tengayapatnam; this river goes far inland: the Tonies, and even Shallops, can enter it in the rainy season; but

In the dry weather, it forms a bar at the entrance, so that boats cannot pass, although within it is always navigable. You have soundings between Ruttera and Cadiapatam Points from 24 fathoms, 3 leagues off the latter place, to 30, 4 or 5 leagues off; and to 35 or 40 at a distance of 6 or 7 leagues. Five or six miles to the north-westward of the latter point is *Coleche*; and on the shore thereabouts you perceive several buildings like pagodas. On the west side of Coleche, and about 3 leagues from Tegapatam river, begins a pretty high red land, intermixed with white, near the sea and very steep to seaward, which continues for 2 or 3 leagues. When you are to the northward of Coleche you may go into 20 fathoms, 2 miles off shore, and to 30 or 34 fathoms, with an offing of 4 or 5 leagues.

CADIAPATAM POINT, which Lieutenant *George Lewis* calls the *Western Cape*, is very remarkable, being a very red steep land, close to the sea, with a grove of tall trees on its extremity. Off this point lie two rocky islots. "As I passed (says that officer) in 1783, within these rocks I can very well judge of their distance; the one lies West from the cape $3\frac{1}{2}$ miles; the other S. W. 2 miles *; the cape, I take it, lying in about $8^{\circ} 10'$ lat. North: these rocks are surrounded with foul ground." S. $\frac{1}{4}$ E. from the northernmost of this, about 6 or 7 miles off shore, lies another rock even with the water's edge, and a part of it about the bigness of a cask above water; it is called the Buoy Rock, and has 13 fathoms within a boat's length of it; without it, about $\frac{1}{4}$ of a mile, it has 17 fathoms; at $\frac{1}{2}$ a mile $19\frac{1}{2}$ and 20; at 1 mile 22, and at $1\frac{1}{2}$ or 2 miles, 23 fathoms, sandy ground. Mr. *Nichelson* sounded all about this rock, and took the following bearings upon it, viz. the northernmost of the rocky islots N. $\frac{1}{4}$ W. the outermost high-land of Cape Comorin E. by N. $\frac{1}{4}$ N. the outermost low land, which is the very pitch of the cape, East, distant about 5 leagues; Cadiapatam Point N. N. E. $\frac{1}{4}$ E. and the extremes of the land to the northward N. W. $\frac{1}{4}$ N. off shore 6 or 7 miles. It would not be advisable to go under 28 or 30 fathoms in the night time, or in hazy weather, the coast hereabouts being foul, and having several straggling rocks which lie a great way off shore.

From Cadiapatam Point to Cape Comorin the course is E. S. E. $\frac{1}{4}$ E. distance about 5 or 6 leagues. CAPE COMORIN, the southernmost point of the Peninsula of India, lies in $7^{\circ} 58'$ lat. North, and about $77^{\circ} 31'$ longitude East of London. Its extremity is a level low land covered with trees, which cannot be seen farther off than 3 or 4 leagues from

* A large French plan of this part of the Coast of Malabar, laid down on the spot, places one of these islots 2 miles S. by W. from Cadiapatam Point, and the other at pretty near the same distance S. W. by W. it makes them lie N. W. by W. and S. E. by E. above a mile from each other. At the distance of $1\frac{1}{2}$ of a mile south from the westernmost islot, there is a *foal*, or *rock under water*, the more dangerous as it only breaks in bad weather. Is this the same as the Buoy Rock?

a ship's deck; but a small hill to the northward of it, which appears like an island when bearing from N. E. by N. to E. S. E. is what people in general take for the cape.

N. B. All the coast we have been describing, from Point Veniam to Cape Comorin, is high, so as to be seen 8 or 9 leagues at sea, not including the high lands, or the Gauts, which commence at the small hill above Cape Comorin, and extend to the northward; these may be descried at 20 or 25 leagues distance in clear weather: when you range the coast close in, you cannot see them; except a mountain which is to the N. E. of Point Veniam, 3 or 4 leagues in shore. Beyond river Veniam, the sea shore is low, edged with white sand, and cannot be perceived above 3 leagues, except in some places where there are trees that may be seen 4 or 5 leagues coming from the offing.

The draughts in general place two great rocks off Cape Comorin, but there is only one large one, having many small rocks about it, and which is about two cables' lengths from the shore. Good soundings are found all round Cape Comorin; to the eastward, the cape bearing N. W. you have from 35, 30, 25 to 20 fathoms, coarse brown sand, 5 leagues off; the cape bearing N. by E. 4 leagues, the depth is 20 fathoms—N. E. $\frac{1}{2}$ N. 4 or 5 leagues, 24 fathoms—N. E. by E. 3 leagues, 24 fathoms, coarse sand—E. $\frac{1}{2}$ S. and the extremes of land to the northward N. by W. $\frac{1}{2}$ W. 4 leagues off shore, 30 fathoms. The cape from N. N. E. to N. E. by N. 7 or 8 leagues, you have 38 fathoms, muddy ground—N. E. by N. 6 or 7 leagues, 35 fathoms, ooze, with some sand, then the extremes of the land to the northward will bear N. by W. The cape being E. N. E. and the extremes of land to the northward N. by W. $\frac{1}{2}$ W. off shore about 4 leagues, you will find 24 fathoms, sandy ground.

In 1759, the king's ship *Elizabeth* discovered a rock to the south-westward of Cape Comorin, described thus in the journal of that ship. "On November 13, being at noon by a good observation in lat. $7^{\circ} 46'$ North, the little hill that appears like an island to the northward of the true Cape Comorin, bearing N. E. $\frac{1}{2}$ N. and the extremes of the land to the northward N. by W. off shore 6 or 7 leagues, we had 35 fathoms. From noon to 2 P. M. the course steered was N. by E. $2\frac{1}{2}$ miles, when we saw breakers on a SUNKEN ROCK, which must be very near the surface of the water, by the sea breaking on it, whilst elsewhere it was very smooth: we saw the breakers very plain for 15 or 20 minutes, and passed within a mile of them; when they bore S. E. $\frac{1}{2}$ E. about $1\frac{1}{2}$ mile, we sounded and had 35 fathoms, the extreme part of the hill, which we set for Cape Comorin, bearing N. E. a little northerly; and the northernmost land in sight N. by W. our distance from what we took for the cape, as well as we could judge, was 6 or 7 leagues: this is a dangerous rock, but very small."

THE LACKDIVAS, OR LACCADIVAS, OR LACCADIVE ISLANDS.

NINE DEGREES CHANNEL, BETWEEN SEUHELIPAR AND MALIQUE.

DANGERS, &c. NEAR THE LACKDIVAS.

TO the westward of the Malabar Coast, is the Archipelago of the Lackdivas, Laccadivas, or Laccadive. This is the general appellation for the islands which extend to the northward of the Maldivas, or Maldiva Islands, from $10^{\circ} 10'$ to $12^{\circ} 30'$ latitude North. There are 19 principal ones, most of them surrounded with reefs and steep rocks, with a great depth of water close to them, so that navigators being at a loss to know when they are near these islands, their approach becomes very dangerous. See pages 111 and 116, wherein they are already mentioned. Between the Laccadive Islands are many channels, through which the ships commonly sail, when bound from the East-Indies to the Persian or Arabian Gulfs; and the most known, at least by European ships, as well as the best to keep, is that of *Mamali* or *Mamala*, commonly called the NINE DEGREES Channel, and sometimes the *Nine and a half*, and *Ten degrees Channel*. It is bounded on the North by the Islands Seuhelipar and Kalpeny, and on the South by the Island Malique.

MALIQUE or *Malicoy*, which Lieutenant *McCluer* calls MINICOY, is very low, and cannot be seen more than 10 miles off; the centre of the island lies in about $8^{\circ} 17'$ North and $3^{\circ} 42'$ West of Ajengo. It is about 7 miles in length, and one or 2 in breadth, with a large reef on the north west side, round which this officer sailed in many places, at the distance of 200 yards from the beach; the passage lies at the north end, very intricate and narrow, and 2 fathoms were the deepest water on the reef, with an increase within: but the bottom was hard coral, which nothing but chains could stand, was there any swell; this reef forms a kind of harbour. The people were very civil, offering any thing their island afforded. It is very populous, well planted with cocoa-nut trees, and the only one of the Laccadivas, where they catch the delicious fish called by the natives *Coomelmutch*, and so highly esteemed among the Malabars.

KALPENY, which lies N. by E. $\frac{1}{2}$ E. from Malique, distance 37 leagues, is 4 miles long and one broad, and well planted with cocoa-nut trees; its west side is defended by an extensive reef, breaking very high in many parts, the rocks above water. "From the north extremity," continues the skilful and indefatigable officer whose account we are transcribing,

transcribing, " we stood along the reef close to the breakers in the Pattamar-boat, had no soundings till close to the surge; and the only passage we could find through was a narrow opening in the reef, with only $1\frac{1}{2}$ or 2 fathoms in the channel; where their boats lie, is about South from this opening. We stood above a mile within the reef, and had 3 or 4 fathoms, all coral rocks. There are four islands in this cluster; two to the westward, and one to the northward of the large one. I make the center of the cluster to lie in $10^{\circ} 7'$ north latitude, and $3^{\circ} 7'$ West of Anjengo Fort, or $73^{\circ} 21'$ from London."

SEUHELIPAR of the navigators, the SEUVELLIES of Mr. *McCluer*, consist of two very small low islands, lying about 9 miles asunder, and surrounded by a most tremendous reef of black rocks, which in many places are above water, about the size of a ship's hull; this reef extends about 5 miles to the southward of the southern island, called *Seubelipar*, or *Schoolpol*, which is of a circular form; the northern Seувеллы, which bears the name of Seувеллы, has not more than $1\frac{1}{2}$, or 2 miles in circuit, being surrounded with breakers, except a small channel for boats. The rise and fall of the tide is there about 6 feet in spring tides, and high water on full and change, at irregular periods but rather before noon.

The southern Seувеллы lies S. $\frac{1}{2}$ W. about 30 leagues from Kalpeny, and N. N. W. $\frac{1}{2}$ W. 38 leagues from Malique, in $10^{\circ} 59'$ latitude North.

In sailing through the NINE DEGREE CHANNEL, if you see either of the islands, you may take a fresh departure, and shape your course for Cape Comorin; but if no sight of them can be got, which is often the case, the weather in the S. W. Monsoon being generally very cloudy and hazy, you must continue to steer to the eastward, in $9^{\circ} 36'$ or $40'$ North latitude, until you strike soundings on the coast of Malabar.

The remainder of the Lakdivas being not so much within our object, nor so well known in general as Seuhelipar, Kalpeny, and Malique, we confine our description to that island, which lies nearest to the Malabar coast.

UNDEROOT, which is the name of this Island, was called *Aquilaon* by the Portuguese; it is 3 miles long and one broad, in $10^{\circ} 49'$ latitude North and $1^{\circ} 5'$ West of Telli-cherry, 15 leagues North of Kalpeny, and 40 from the Continent; on the north side there is an extensive bank of soundings from 5 to 7, 11, 15, and 19 fathoms, chiefly coral ground; this bank is surrounded with coral rocks, through which there is only a small channel for small boats. It is well planted with cocoa-nut trees, its water is tolerably good, and fine turtle can be taken up there at any time of the day. We cannot terminate this article of the Lackdivas, without completing the short account already given of their winds and currents.

In the S. W. Monsoon the winds between Cape Bassas in Africa, and these islands, as we have observed, are constantly in the south-west quarter, mostly from S. W. to S. S. W. and sometimes South, fresh and steady gales. As you come near the Lackdivas you meet

meet with fresher gales, and squally weather, except in the latter end of the season, the end of September, or beginning of October; then near the islands you find little winds, and variable with squalls and rains.

In this track there is a constant current to the westward, mostly to the S. W. or W. S. W., which is very deceiving, and throws ships much out of their reckoning; its run being supposed to be from 8 to 12 miles a day. In the S. W. Monsoon this current between the Coast of Malabar and the Lackdivas sets to the S. S. E. as the coast lies, with a rapidity of 20, 24, or 26 miles in 24 hours; between the Lackdivas its direction is to the S. S. W. and S. W. at a rate from 18 to 22 miles in 24 hours, and you have this current about 2 or 3 degrees to the westward of these islands: then it sets entirely West or W. S. W. 8, 10, or 11 miles, in 24 hours, and frequently you will find the ship 10, 12, or 14 miles to the northward or southward of the reckoning, but generally to the southward.

To the northward of the Laccadivas, lie the banks of SHERBANIANG and PADUA, which extend to the 13th degree of latitude North. These shoals are the more dangerous, as they do not break, and cannot be perceived till you are upon them; you find likewise some banks more northerly, which have been sounded upon, and are reported not to be dangerous; but that you may not be deceived by the conformity of depth on these banks with that along the coast of Malabar, attend to the following directions.

The navigators who sail to the northward of the Laccadivas, *viz.* those from the Arabian or Persian Gulfs, think it almost always sufficient, especially in bad weather, or the westerly Monsoons, to get soundings on the coast of Malabar; then they steer S. S. E. and S. by E. in order to keep mid-channel between the islands and the coast; but supposing the soundings had been taken on one of the banks above mentioned, it is evident, from their situation with respect to the Laccadivas, that a ship by this course, would risk to be run ashore on one of these islands.

The best way to avoid this danger, when the weather will not permit you to see the coast, is not to depend upon your first soundings, but to keep your course for some time; then if you lose your soundings, it is a true sign you sounded on one of the banks; but if they continue, you may be sure you are near the coast: it is best to make the coast of Malabar in 14°, from 10' to 20', and to get in good time into this latitude. This remark of M. D'Après concerns principally those who are coming from the southward to Goa; but if a ship is bound from the same quarter to Ceylon, there is no reason for sailing to the northward of the Nine degree channel. If you are going to Bombay in the westerly Monsoon, it is best to make the land in the latitude of Kennery and Hennery, and not before; by this you have nothing to fear from the Sherbaniang shoal, which is placed 80 leagues from the coast by some, and 100 leagues by others.

We have taken notice already of the ANGRIA BANK, in a note page 216.

Mr.

Mr. *Dalrymple*, in his "Memoir of a Chart of the Indian Ocean," p. 30, quotes Captain *Forrest*, to whom he is indebted for the account of a recent French discovery of a small low woody island, to the northward of the Laccadivas; but the person who gave that gentleman the information did not remember whether it was in $14^{\circ} 49'$, or $14^{\circ} 59'$ north latitude. Mr. *McCluer*, p. 31, of his Description of the Coast of Malabar, makes the following observation on this discovery. "When we got into $14^{\circ} 40'$ North, I intended to traverse for the island said to have been seen by a French ship; but the season being too far advanced, and our water a little short, we stood for Bombay. This island may be doubted to exist, as the supposed situation of it is exactly in the track of the vessels which stand off from Goa in the months of March and April: had there been any thing of the kind, we must have discovered it long ago: I imagine Captain *Forrest* was wrong informed."

Near the Laccadivas several other dangers are mentioned by M. *D'Après*. 1st. A rock even with the water's edge, in $12^{\circ} 32'$ latitude North, and about 16 leagues from the coast, which is said to have been seen by Messrs. *Hamilton* and *Gray*, and which has been searched for in vain by Lieutenant *McCluer*.

2d. A shoal on which the *Richmond* struck in 1736, with rocks and breakers, in $12^{\circ} 21'$ latitude North.

3d. A shoal of breakers in $11^{\circ} 5'$ latitude North, 10° East from Mount Dilly, which was discovered by Captain *Wilky*, of the ship *Charles*, in 1721.

All these, with the banks of soundings quoted by M. *D'Après*, as well as the Laccadive, are at present omitted in Mr. *Dalrymple's* Critical Chart, we cannot therefore hazard any thing positive concerning those dangers; but we are not the least inclined to deny their existence, nor can we subscribe to the opinion of Mr. *McCluer*, that from a passage being much frequented, an argument may be drawn sufficient to invalidate the discovery of an unknown danger in that passage. We must not close this account, however, without taking notice of the ELICALPENY BANK, which lies 10 leagues N. E. by N. $\frac{1}{2}$ E. from Underoot, $1^{\circ} 30'$ West of Tellicherry, and about 6 miles long; the least water found on this bank was $6\frac{1}{2}$ fathoms: "But by the large hollow swell upon it, I am convinced," says Mr. *McCluer*, "that the sea must break here in the S. W. Monsoon. This shoal has sharp coral rocks all over; we came to anchor with a cable to our anchor, the chain being unbent, and in 5 minutes the buoy rope was cut, although not bent to the crown, but to the shank of the anchor; in the space of two hours, when we wanted to shift the anchor, with one bent to a chain we found the end of the cable only came up, and it is ten chances to one, that upon these banks you never recover an anchor."

THE MALDIVAS AND THE EIGHT DEGREES CHANNEL,
ISLE OF GAMA—OURO ISLAND.

BETWEEN Malique, the southernmost of the Lackdivas, and Kelay, the northernmost of the Maldivas, named also the *Head of the Islands*, is the EIGHT-DEGREES CHANNEL; this head, or north end, lies in $7^{\circ} 5'$ latitude North, and $73^{\circ} 8'$ longitude East, 22 leagues to the South of Malique; it is a very low island, covered with trees, which can be perceived 5 leagues off, in clear weather. The best latitude to keep in when you go through this Channel is from $7^{\circ} 30'$ to $7^{\circ} 45'$.—N. B. In page 111, of this work, it has been erroneously printed, $8^{\circ} 45'$ or $8^{\circ} 50'$ North.

The MALDIVAS are very little known; they compose an innumerable multitude of small low islands extending in a direction S. by E. nearly, from $7^{\circ} 5'$ latitude North to $0^{\circ} 15'$ latitude South, in which parallel the Chevalier Grenier places the southernmost of them; but there is reason to think they extend much more to the southward of the Line, the southernmost of them having been observed by M. Ronçais-Violette to lie in $0^{\circ} 36'$ latitude South, as we have mentioned page 139.

The largest breadth of the Maldiva range is not above 20 leagues, and is formed by several large groups or clusters, sometimes double, to which they give the name of *Atollons* or *Attols* (see page 139), each of these being bordered with islands and rocks that are also scattered within in great numbers. These Attols are separated from each other by channels of different widths, and probably of a great depth; we can only mention two of them; one between the first and second Attol, 20 leagues to the south of Kelay, through which the French ship *La Reine* sailed in 1750; and the other towards the middle of the range, and near *Maldiva*, or the *King's Island*; this is called *Polidoo*, or the Black Channel; it is the more remarkable, as the water there is as black as ink, and bubbles as if boiling.

The Diego Rays Islands and the Southampton Rock to the West of the southern Maldivas, are described in page 139. To the southward of the Maldivas is supposed to lie the ISLE OF GAMA, whose latitude in the Charts varies from 2° to 4° , but its existence is denied by many navigators.

To the East of the same islands there is no other danger known but the OURO island. "Whether Ouro near the Line does, or does not exist, or whether it be an island or rock, or both, may admit of doubt; in the *Grenville*," continues Mr. Dalrymple, "I thought

thought I saw the rock; it looked like a black small rock, with the appearance of a shoal and breakers of small extent; as it was to windward, and the ship had fresh way, it was soon out of sight, and a doubt whether it was really a shoal, though it had to me very much that appearance. It was seen at $\frac{1}{4}$ past 10 A. M. to the S. E. our course to noon N. E. by E. 8' latitude ob. $0^{\circ} 47'$ North, $81^{\circ} 0'$ east longitude from Greenwich. Its position will therefore be about $0^{\circ} 42'$ north latitude, $80^{\circ} 54'$ east longitude.

"The *Compton*, Captain *Mifnor*, 1728, thought they saw the island Ouro, making in *Three hummocks*; they lost sight of it in an hour: when they saw it, it bore N. E. 4 leagues by the captain's estimation, 6 leagues by the chief-mate's: the captain's journal says, he is certain it was land." The *Compton's* discovery is generally described to be rocks as high as a ship's main-top, but the journal gives no countenance to this description, positively calling it land appearing in three hummocks. They had no observation; the captain's reckoning makes it about $0^{\circ} 16'$ North, the chief-mate's in about $0^{\circ} 2'$ North. The accounts published on the contrary represent it to be in $0^{\circ} 55'$ south latitude, its longitude is about $81^{\circ} 30'$ East."

Van Keulen says, "It has been seen three times; 1st, by *Christian Frikkius*, who was ashore on it in a voyage from Batavia to Surat, when they left a man upon it for mal-practices, and on their return went again on shore to look for him, but could not find him.

"Secondly, by a Dutch ship from Point de Galle; it was found on the south point, low and flat, with a white beach on the west side, but on the north side a little hilly; on the appearance of bad weather the long boat which was sent thither was obliged to return; they guessed the length from South to North distance 5, or 6 miles (20' or 24), and $1\frac{1}{2}$ (6') from it to no ground.

"Lastly, it was seen 1st July 1748, by the ship *Nearflegbeid*, in $0^{\circ} 11'$ North, distance 5 miles (20') to the W. S. W. they supposed it was one of the Maldivas, but on the 13th July, thinking themselves near Ceylon, they made the Nicobars, which proves it was Ouro."

GRAFTON ROCK—APALURIA ISLAND, AND POL-VOREIRA.

SOME other islands and dangers remain to be mentioned, that lie at a great distance to the southward in the Indian ocean; these are the GRAFTON ROCK, APALURIA Island, and POL-VOREIRA or PULO VAREIRA.—Mr. *Dalrymple's* Memoir, page 20 et seq.

The Sunken rock named after the *Grafton* man of war was seen in lat. $10^{\circ} 20'$, and long. by different reckonings $81^{\circ} 20'$ and $82^{\circ} 20'$; whose mean is $81^{\circ} 50'$ East.

Nearly in the same longitude, but in the latitude of $8^{\circ} 55'$ the *Triton*, Captain the Honourable *William Elphinstone*, felt a shock in the night, which was supposed to have been the effect of an earthquake.

APALURIA is described as a high island. In 1719, Captain *Philip Worth* in the *Townsend*, on the 26th June, lat. obs. $11^{\circ} 16'$ South, long. $66^{\circ} 44'$ East from the Cape of Good Hope, at sun-set thought they saw the island Apaluria, but night coming on could not be certain; it bore N. W. by N.; at 7 in the morning it was seen again S. W. $\frac{1}{2}$ S. and at noon lat. obs. $8^{\circ} 57'$ South, long. $67^{\circ} 1'$ East, it bore S. W. by S. $\frac{1}{2}$ S. variation P. M. $3^{\circ} 46'$ West. By projecting the run of the ship, Mr. *Dalrymple* finds that this island is to be placed in about $9^{\circ} 50'$ South, at least, and in about $84^{\circ} \frac{1}{2}$ East longitude.

In 1731, the *Aislachie*, Captain *Birch*, in latitude obs. $9^{\circ} 17'$ — $9^{\circ} 28'$ South, mean $9^{\circ} 22'$, supposed they saw Apaluria S. W. by S. but no distance is assigned; one journal says it was 10 leagues distant at 6 A. M. when it bore S. E. The alteration of bearings being incompatible with the distance run, Mr. *Dalrymple* is led to conjecture, if it was land, that the noon bearing should be S. E. by S.

In 1770, the *True Briton*, on the 2d of November, lat. obs. $9^{\circ} 37'$ South, long. $65^{\circ} 39'$ East from Cape Agulhas ($85^{\circ} 34'$ from London), course N. N. E. 2 K. 2 F. to half past noon 3d, when, the clouds clearing away to the westward, they descried from deck the Island Apaluria bearing W. by N. distant about 12 leagues. It appeared high and uneven, and seemed to extend 7 or 8 leagues North and South; the weather being cloudy soon lost sight of it. They reckoned it in $9^{\circ} 35'$ south lat. $65^{\circ} 48'$ east long. from Cape Agulhas ($85^{\circ} 43'$ from London), they saw a drift and many birds.

Van Keulen says *Pulo vareira* (POL-VOREIRA) in $9^{\circ} \frac{1}{2}$ south lat. was seen by the ship *Ganssenhof*, 1712, going from Ceylon to Batavia, bearing S. W. 9 or 10 miles ($36'$ or $40'$) distant.

Mr. *Dalrymple* concludes with these words, "I am still in doubt whether these authorities concerning an high island in this quarter, can be admitted as positive testimony, though sufficient ground for attention."

ISLE OF CEYLON.

THE GULF OF MANAR.

DESCRIPTION OF THE SOUTH-EAST COAST OF INDIA.

THE ISLE OF CEYLON lies near the south-eastmost part of India, and is in some degree connected with the continent by a narrow ridge of sands mostly dry, and about 11 leagues in length, to which they give the name of *Adam's Bridge*: at each end of this bridge there is an island, viz. Ramanout, or Ramanacor, called also Ramisseram on the west, and Manara on the east side; and between those islands and the main, to which they are respectively adjacent, are the only practicable openings in the bridge: the deepest is that of Manara, but the most frequented is the west channel between Ramanacor Island and Point Ramen of India; it is called by the Indians *Odiaroo*, or Serpents River. The width of this passage, according to Lieutenant *George Lewis*, is about $1\frac{1}{2}$ mile, and between the two points (except some time before and after high water) there is a reef of rocks that stretches quite across, leaving only an opening near the island side, of about 30 yards, which has at full sea 5 or 6 feet water: when the Lieutenant went over it, in 1783, there was less than 3 feet at about half flood. The tide rises there pretty near 4 feet, and flows about N. E. and S. W. or 3 hours.

Between the west coast of Ceylon and the opposite coast of India, named formerly the FISHERY COAST, from its numerous pearl banks, that space of sea called GULF OF MANAR, and by the Dutch TUTICORIN BAY, is shut by Adam's bridge on the north side, and opens from Cape Comorin to Point de Galle (Gaul), the southernmost end of the coast we are describing.

We know very little of this gulf, in which it is very dangerous to be embayed, and are not much better acquainted with the Fishery Coast, where the Dutch have their fort and factory of Tuticorin.

Lieutenant *George Lewis*, in the months of May and June 1783, passed this coast in a boat that kept all the way within 2 or 3 miles of the shore, and always came to an anchor before dark; he tells us it is clear and moderately high from Cape Comorin to MANAPAR POINT, on which stands a Portuguese church, and which lies in $8^{\circ} 22'$ latitude North; then it is very low all the way, and very thin of trees. "The pagoda to the N. E.

of

of Manapar, (in form of a truncated cone) is the highest," says this officer, "which I ever saw in India; it appeared at first in the water very much like a large ship endwise to us, with all her sails set.

"There must be some dangerous shoals to the eastward of Manapar Point, for the water broke very much on all sides of us; we passed through them in a stiff gale at S. W. and anchored at the north-eastward of the Pagoda, for that night, in a little road.

"The first low islands that make their appearance are about 7 or 8 miles before you come to TUTICORIN; they lie about 4 miles from the shore, and are the only reefs that the sea partly washes over. They run (as the succeeding islands partly do) nearly parallel to the coast, all the way to Adams's Bridge, (in lat. $9^{\circ} 17'$ North) save two pretty large islands that lie off Tuticorin, which appear to be covered with shrubs and herbage; the westernmost of these two has some high buildings raised by the Dutch as storehouses, I believe; the trade carried on here being very great in sea shells called *Shank*. The tide rises at Tuticorin near 4 feet, and flows, full and change, about N. E. by N. and S. W. by S."

In this gulf, during the N. E. Monsoon, the winds blow constantly from the north-east quarter, and often very strong; but off Point de Galle they decrease and die away.

Having already spoken, page 116, of the currents in the Gulf of Manar, we have only to add here, that notice has been taken by several navigators of currents setting in and off this gulf at the different seasons of the year, so that a ship bound to the Malabar coast in the N. E. Monsoon, in order to fall well in with Cape Comorin, ought to coast along Ceylon as far as Caliture, before she crosses the gulf; and when making for Ceylon from Cape Comorin, to be careful of falling in to the northward of Caliture. Other experienced navigators assert that they never observed much outset in the N. E. Monsoon, but have always found their reckoning very exact between the two places; however no error can result from your adopting the course prescribed in the first case, and the precaution is useful.

DESCRIPTION OF THE WESTERN COAST OF CEYLON,

FROM MANARA, TO POINT DE GALLE, OR GAUL.

MANARA, or MANAR ISLAND, whose southernmost end lies in about 9° latitude North, is known by the clusters of cocoa-nut trees standing on the West of the channel between it and Ceylon: at the entrance of this channel you find 13 or 14 feet water, but a ship of any tolerable size should always anchor a good league off to the westward

westward of it. Along the east end of Manara, within cannon shot of the shore, you have 20 or 21 feet water.

In the fair way there is a reef, which lies N. W. and S. E. off Aripo, the south end of which bears from Manara passage S. W. by S. about 4 leagues, and the north end W. S. W. $\frac{1}{2}$ leagues. This reef is made of broken rocks, through which there are several channels known to the natives, and practicable only to their barks in calm weather; for when it blows a little fresh from the South, the reef breaks all over; you should therefore stand to the N. W. till about a league of its north point, and then you may, in small craft, shape a course without fear to Manara channel, or any other place you think proper. Within this reef, towards the said channel, the depth increases gradually to 13 or 14 feet water.

From Manara to ARIPO the course is S. W. by S. 14 or 15 miles, the coast forming a kind of bay between the two. Aripo is known by a small village with a little church; off which N. W. by W. about 2 miles, you meet with a rock, that has 8, 9, and 10 feet water, so that country vessels can pass over it: in the right channel you find 14, 15, or 16 feet. It is requisite then, in sailing between Manara and Aripo, not to go under that depth.

Small vessels bound from the southward to Manara should observe; when they are to the northward of the west point of Cardiva, to keep about 3 leagues off shore, in 18, or 20 fathoms, small rocks; then to steer N. N. E. and N. E. by N. till they bring Aripo church to bear East; following this track, when in 4 or 5 fathoms they will see the reef break, as well as the rock on the reef; then they continue their course by keeping in the above depth of 14 or 15 feet.

But if you are bound from the southward to Manara in larger ships, when you find yourself 3 leagues to the West of Cardiva Point, in the above-mentioned depth, you are to steer North until you see the reef break, and then stand off to the westward about a league in rounding it. From this spot you can descry Manara Island to the N. E.; you may then haul in again and approach it, with the lead going and a good look out, as much as your ship will admit. In this track you will sometimes find that from 20 to 25 fathoms, the depth decreases all at once 2 or 3 fathoms, which happens either nearer the land or the reef: but this sudden change must not alarm you, if it is off the island; for having once got into 7 or 8 fathoms, you meet with regular soundings, decreasing gradually towards shore to 5 fathoms, sandy ground: if nearer to the reef you have 8 fathoms, gravel and small rocks, you must immediately stand off.

From Aripo to CARDIVA, or CARIDIEN ISLAND, there are 7 or 8 leagues S. W. by W. This island is very narrow, crooked, and between 4 and 5 leagues long. Its southernmost point is a reddish hill, steep, and shaped like a cone, in $80^{\circ} 26'$ latitude North; you have 8 or 9 fathoms 4 leagues off, rocky ground, coming from the West. In
clear

clear weather, at 4 or 5 leagues distance, you may see the bottom in 15 or 20 fathoms. In approaching it the depths are unequal, and require a constant use of the lead; be not surprised if after having but a few fathoms you find suddenly 8 or 9, because from $3\frac{1}{2}$ leagues off shore, as you stand towards it, the ground is very uneven, between 8 and 9 fathoms, to about a league off the island, where there is a bank with only 3 fathoms, flints, on it; when you are past this bank, the ground is sandy in 5 fathoms. To the S. E. of this island there is a bay about 2 leagues from Calpentyne.

The westernmost point of CALPENTYNE ISLAND is near 6 leagues S. W. distant from the south point of Cardiva, with uneven soundings in this part nearly as above. The inner edge of the 3 fathoms bank, lies within a musket shot of the shore, extending beyond Calpentyne; and about 2 miles farther there is a ledge of rocks on which the sea breaks. This point is easily known by a thick tuft of trees, the only ones to be seen, except on the main island, to the eastward, where you perceive about 100 cocoa-trees. Between these trees and the thicket, at the bottom of a little valley, is a bight called *Pacar Bay*, which affords no shelter from the westerly winds; the ground besides, as well as in the adjacent parts, is there so foul and dangerous that you cannot anchor in any part without the risk of losing your anchors, even within the 3 fathoms bank, except very near Cardiva or Calpentyne, in 4 or 5 fathoms.

From Calpentyne Point to CHILLAU they reckon 8 leagues, and the course in the offing is S. S. W. To the southward of *Neverary Bay* begins a ledge of rocks and coral, stretching along the coast to within a league northward of Chillau, where, as it widens about a league, it will be proper to keep the lead going; farther off the shore the bottom is sand.

Chillau River discovers itself by a sandy hill, on which some bushes are seen; and a round hummock near it. In coming from the southward you may sail near the coast, till opposite the river; but to the northward of it, you must keep at 2 miles distance from this ledge of rocks and coral, before you stand in for the shore: the bottom between Calpentyne and Chillau, is fine sand, sometimes a little coral; but the nearer you approach Calpentyne, the ground becomes worse for anchoring.

From Chillau River to MARAWIL the course is S. by W. westerly, about 6 leagues; the water is deeper between these two places than in any above mentioned, and you may approach it by the help of the lead. Marawil is known by 2 or 3 gardens of cocoa-trees which stand a little inland, and in coming from the northward resemble those of Napacar or Calpentyne.

From Marawil to CAYMEL, the coast lies S. by E. 4 leagues: this is a small river, whose sides, at its mouth, shew a point full of cocoa-trees, when you come from the northward; the bottom is good between these two places, especially near the shore.

NEGOMBO lies $1\frac{1}{2}$ leagues S. W. by S. from Caymel, and the land seems to form a bight from the northward. If you are off Caymel you must edge a little from it, on ac-

count

count of a rocky ledge between this place and Negombo, and keep 2 leagues off shore, in 7 or 8 fathoms, till you bring Negombo to bear S. E. by S. by this means you avoid a rock which lies N. N. W. of the flag-staff, or the north point of the fort; close to it you have 6 fathoms, and upon it 10 feet. When bound to Negombo, from the southward, bring the fort to bear S. E. and keep that course till you anchor, without borrowing any more to the northward; Negombo is known by a point the most projecting on the whole coast, and on which is a thick wood of cocoa-trees; off this point lies a ledge of rocks of small extent.

From the outer point of Negombo, they reckon about 6 leagues to Colombo; the ground is good all the way, except over against a little river, where a rocky point is projecting about 2 miles. Keep in 10 or 12 fathoms, then you may anchor before Colombo in 6 or $7\frac{1}{2}$ fathoms, the flag-staff bearing South; but come no nearer the river because of the rocks lying at its mouth, and round the south point.

From Colombo to PANTURE the course is S. by E. 4 leagues: between the two is GALKISSE, a little round bay, open and without shelter; ships generally coast along to this bay about 4 miles off in 13 fathoms, sand. In sailing from Galkisse, they keep in 18 fathoms, for fear of the rocky ground near the coast. Panture is a river known by 2 rocks above water, which are on the north side of the entrance, at the distance of two gun-shots. The anchorage is to the southward of these rocks in 10 or 12 fathoms, 2 miles off shore.

From Panture to CALITURE, or *Calutane*, the distance is near 4 leagues S. by E. To the northward of Caliture lies a rocky bank, and on the south side of the river stands the fort on a small eminence. If you intend to anchor there, your mark is two hummocks near each other, and not far from the shore, the northernmost of which is the lowest: as soon as you see the fort between these hummocks, steer right for them, into 4 or 5 fathoms, but never come to the southward of them for fear of accident. Observe that standing towards the fort, the bottom is very foul in 15 or 16 fathoms, but tolerably good from 6 to 4 fathoms.

It is reckoned about 2 leagues South from Caliture to BERBERYN ISLAND; and you sail along shore in 7 or 8 fathoms. To the southward of Caliture is a rock 12 or 13 feet under water; it bears S. W. $\frac{1}{2}$ S. from the fort, and S. W. by W. $\frac{1}{2}$ W. from the Hillock of *Makvenien*. The passage is good in 4 fathoms, and about 2 miles wide, between the shore and this rock; but it is better to go without coming nearer than 6 fathoms. Between Makvenien and Berberyn the bottom is foul in 15 fathoms, and tolerable from 15 to 20; but above 20 it is very bad, rock and coral, so that in sounding scarce a grain of sand will come up with the lead.

Berberyn is a small island, very near Ceylon; you may anchor to the northward of it in 6 or 7 fathoms; there is also a little bay fit for barks or long boats: care must

be taken in rounding the point, where there are several rocks: the anchorage of this bay is in 2 or 3 fathoms, sand, a small musket-shot off shore.

From Berberyn Island, to point COCACHEIRA, the course is S. S. E. 4 leagues, and between the two, about 3 miles from Berberyn, you meet with river BENTOTTE, to the southward of which is a small fort upon a rising ground, the anchorage there is good in 12 or 13 fathoms, black sand. To the northward of this river are two rocks plainly to be seen. Between Berberyn and Point Cocacheira, at 4 leagues off, you have from 28 to 30 fathoms, hard ground; and from the latter place you may range along very near in 7 or 8 fathoms, but at 4 leagues distance, 100 fathoms are not enough sometimes to reach the bottom.

Five leagues to the S. E. of Cocacheira lies RAGAMNA Point, stretching into the sea, with some cocoa-nut trees upon it, and some large high rocks on the edge of the shore, by which it is easily known. In this course you desery a little river scarce practicable for boats, and to the southward of it a reddish hummock steep to seaward; about a musket-shot to the northward, and 3 leagues from Ragamna, is a garden of Cocoa-trees, called Amlamgoda; four miles to the southward of this garden a reef runs out about 2 miles, upon which the sea is continually breaking: you must come no nearer in this part than 20 fathoms; at 15 the soundings are irregular and very foul to 9, 8, or 7. It is in some places sandy, but not very clean.

From Ragamna to Point de Galle the distance is about 4 leagues S. E. by E. in coasting along you must not come under 25 fathoms. A good league to the westward of Ragamna, and over against a reddish hummock close to the sea, lies the rock of *Gindure*, having only 12 or 14 feet water, and 15 or 16 fathoms all round it. To the southward of *Gindure* there are also two rocks under water, within which, about a cable's length, you have 15 or 16 fathoms water. These rocks can be easily known; they are but 5 or 6 feet under water, and the sea breaks over them continually: boats and small vessels may pass between them and the shore, in 9 or 10 fathoms, but it is better to go near the rocks than the shore because the soundings are uneven, and increase or diminish 2 or 3 fathoms at a cast, yet you have never less than 4 or 5 fathoms. The two funken rocks are at about 3 or 4 miles from Point de Galle.

POINT DE GALLE lies in $5^{\circ} 48'$ latitude North and $80^{\circ} 30'$ East of London. It is bluff to seaward, and rises gradually higher toward the land; the ground about it is pretty mountainous, but to the westward the land is low. Within Point de Galle is a bay where the Dutch have a considerable settlement, well fortified with a good garrison. They do not suffer any strange ship to enter, without sending them one of their pilots, in order to preserve the knowledge of the pilotage to themselves. Nothing farther can we remark concerning this place, unless it is that you are to come nearer it than 16 or 18 fathoms, the flag-staff bearing N. N. E. if you would anchor in good ground.

Before

Before the bay lie two rocks, one of which is 15, the other 17 feet under water, and round them you have 10 or 11 fathoms; if you come no nearer than 15 fathoms, you run no danger of foul ground: on the east side of the same bay a rock is seen on which the sea breaks.

INSTRUCTIONS FOR SAILING BETWEEN POINT DE GALLE, AND CAPE COMORIN, IN EACH MONSOON.

PPOINT de Galle and Cape Comorin lie from each other N. W. $\frac{1}{4}$ W. and S. E. $\frac{1}{4}$ E. very near, at a distance of about 70 leagues.

In the N. E. Monsoon the currents are very uncertain about Point de Galle and in crossing the Gulf of Manar. They set off the point W. S. W. and have been found often, in the opening of the gulf, to run S. W. very strong, so that ships, in light winds and calms, have sometimes been driven suddenly on the Maldivas. To avoid this it would be advisable to round the Isle of Ceylon, at least as far as Caliture just now described, from whence, and not before, you may safely cross to Cape Comorin. If unexpectedly you should happen to make the land to the eastward of the cape, avoid coming too near the coast, on account of the dangers which have been already mentioned.

Being 2 or 3 leagues off Point de Galle with the *Haycock* * and the point in one N. by E. $\frac{1}{4}$ E. you will have 30 fathoms water. Thence, according to Mr. *Nichelson*, you ought to coast it along shore, taking care to keep your offing, from 2 to 4 or 5 leagues, in depths of water during the day from 44 or 40, to 25 or 20 fathoms; under the latter depth it would not be prudent to go, on account of the several straggling rocks, 2 or 3 miles off shore, described in the preceding section; and in 25 fathoms you will not be more than 3 miles from the coast.

In the night time you ought not to go under 28 or 30 fathoms; as in some places with that depth you will not be more than 4 or 5 miles off shore:—but at night or during the day you are not to sail in less than 40 or 44 fathoms, or else you will soon be off the bank, and have no soundings. If you should then find light winds or calm, and the current southerly, the ship would be driven back again or perhaps off the coast; this can be prevented by keeping in the depths recommended, where you may anchor and make sure of your progress.

As you come near Caliture, you may make bolder with the coast, and stand into 15 or 16 fathoms, clear sandy ground; by standing in shore, in blowing weather, you will find

* A remarkable hill situated on the level part of the country, and taking this name from its form.

the sea very smooth. "I have several times," continues Mr. *Nichelson*, "coasted it along this part of Ceylon, and have sometimes met with a small southerly current, frequently no current at all; and have found when it has blown very fresh at North or N. N. E. for 24 hours together, a very strong northerly current, with which, by keeping in the depth above mentioned, I have turned it up along shore, and gained a great deal of ground."—From Caliture you may safely stretch across the Gulf of Manar for Cape Comorin.

In the S. W. Monsoon this passage becomes more difficult, as the currents set strongly into the Gulf of Manar; by them many ships have been driven to the northward into the gulf; and it is not without great loss of time, and imminent danger, that they have got out again. "I never experienced any of these strong currents," says the gentleman above quoted; "nor do I believe any ship that keeps Ceylon close on board, within 2, 3 or 4 leagues of the shore, will meet with any of them."

THE SOUTHERN COAST OF CEYLON,

FROM POINT DE GALLE TO THE ELEPHANT AND THE GREAT BASSAS.

THE coast from Point de Galle to RED-BAY lies about E. by S. $5\frac{1}{2}$ or 6 leagues: and about a league to the westward of this bay is a small island called *Woody Island*, from its being covered with trees. In coming from the westward to enter Red-Bay, you are to range along the coast in 12 and 14 fathoms water, till you have doubled a steep red point which makes the entrance: then you descry a reef, very near the shore, off which you are to sail in the depth above said, till you see to the westward of the bay an islet close to the shore, and a rock within the reef: you must continue to steer to the East until you bring the islet and the rock in one: as soon as they are brought to bear, North and N. by W. you are to approach it within a stone's cast, and when it is passed at a cable's length, you come to an anchor in $4\frac{1}{2}$ or 5 fathoms; should you pass it at 2 cables' length you risk to meet with very foul ground. When the islet and the reef are in one, it is absolutely requisite to sail toward the reef, as we have said, that both should remain to the N. N. W. for fear you should fall at the reef's point on a sunken rock on which there is only 11 or 12 feet water.

To the eastward of the bay the land is high, and there is a little village called Mietre, but it is not possible to land on this part of the coast, on account of a ledge of rocks which borders almost $\frac{3}{4}$ of the bay. In going out of this bay you are to follow the
reverse

reverse of the directions to come in, and when in the depth of 14 fathoms, you may steer at pleasure, without however leaving off the lead.

From Red Point to MATURA, or *Mature*, the distance is about 3 leagues E. by S. 4° South: this is a Dutch settlement having a small fort, which may be seen a great way at sea, bearing from N. N. W. to N. E. as the coast hereabouts is pretty high: here you may get plenty of wood and water.

Matura Bay, at the mouth of a river of the same name, is very open, but you may anchor before the town, and ride smooth enough in the N. E. Monsoon in 22 or 20 fathoms, sand mixed with shells and ooze; Matura Island bearing N. E. $\frac{1}{2}$ N. and Dondra head N. E. by E. or E. N. E. off shore about 2 miles; under 20 fathoms in Matura road it is foul ground, unless in some small spots known only to the Dutch.

Matura Island is small and rocky, much resembling a haycock, and lies to the eastward near the main land; opposite the fort, behind the island, is a good shelter for boats, where they come to anchor, as they cannot land on account of the surf and shallowness of water; the Dutch send off canoes to carry people out of the boats on shore.

The entrance of the river is about $\frac{1}{2}$ a mile to the westward of the fort; boats go a small distance up this river to fill water, but the coming in is made dangerous by the rocks which lie under water; and the outlet of the stream is so strong, that any boat touching on these rocks is in danger of being overfet, therefore it is best to have the natives to pilot you in and out, and then you may water with expedition.

Going to DONDRA HEAD from Red Point the course is E. by S. $\frac{1}{2}$ S. $4\frac{1}{2}$ leagues, and from Matura S. E. $\frac{1}{2}$ E. 4 or 5 miles. Dondra Head is a low point of land, whose extremity, lower than the rest, is planted with a large cluster of high cocoa-nut trees, which makes it easily known; to the S. E. of the west part of this head lies a ledge of rocks, stretching out to S. W. by W. about $1\frac{1}{2}$ mile, with only 9, 10, or 12 feet water upon them, and on which the sea breaks sometimes very high; towards the sea you have 6 or 8 fathoms water, and within, towards the coast, only 5, or 4; you must approach this ledge with great caution: when you are off Matura in 12 fathoms, if you steer E. S. E. 5° S. you will double Dondra Head at 2 miles distance in 15, 16, and 18 fathoms.

A little to the eastward of Dondra Head are the *Red Cliffs*, a pretty remarkable land close to the sea; the coast about them is very steep.

From Dondra Head to GAELIES the course is East 3° S. 1 league. Gaelies Point is high and steep in such a manner that to anchor there you must range it along at half a musket shot; otherwise it is very difficult to enter it, and to anchor without risk of losing your anchors: you may approach it as near as you please, there being no danger but what is visible. Gaelies is a small bay, which is rounding to the westward; ships may safely anchor there in 4 and $5\frac{1}{2}$ fathoms, oozy ground; they are sheltered from the West, North and South winds; but those from the East bring in some swell.

From

From Gaelies to DICKWEL the distance is $2\frac{1}{2}$ leagues E. N. E. it is known by a garden of cocoa-trees about 2 miles long. *Bemberande* lies in the middle of both, and between it and Dickwel a rocky ledge, stretching near 2 miles from the coast, and on which the sea often breaks, must not be approached under 15 fathoms.

From Dickwel to NIELWEL they reckon 2 leagues to the E. N. E. you coast it along shore at a gun-shot distance in 12 and 14 fathoms. Nielwel is a place of some trade, and in the west part of its bay ships are sheltered from the S. S. W. and West winds: it may be known by a pretty high steep point on the west side, having a large white building with a cupola, which makes it very remarkable; in coming from the westward this point appears as forming an islet, covered with cocoa-trees; you must range it along as near as that of Gaelies in 12, and 14 fathoms; at the east point a rock shews itself above the water, but there is no other danger within the bay, except three flat rocks near the shore, and a shoal over which they say the largest ships can sail; it is advisable however not to try it without your lead. Off this place, at 4 miles distance from the shore, you will have 32 fathoms, at 6, 8, or 9 miles 52 fathoms, and without that no soundings.

From Nielwel to COENACKER, or *Kerkatoes* Bay, the course is E. N. E. 5° E. 5 miles: you must keep near the land, as it has been said, in 12 or 14 fathoms water: this bay is pretty large, and directly in the middle of its opening you perceive a great rock, with a small steep point to the westward, which you must approach very near in coming in. Two leagues farther to the E. N. E. 5° E. lies Point *Tangale*, which has a small bay.

They reckon from Tangale to WALUWE 4 leagues E. N. E. 5° E. the land between these two places is low and sandy near the coast, but steep and lofty as you remove from it: you are to range it along 4 miles off shore, in 20, and 22 fathoms, sand mixed with coral.

Waluwe is a large river, with a small hill to the northward; off its mouth about 4 miles lies a rock on which the sea is commonly breaking; you may, with ships of middling size, sail between the coast and the rock in 7 or 8 fathoms, sandy ground.

From Waluwe the course is E. N. E. northerly, to MAGO, a point encompassed with rocks, and as the foul ground begins at half way, you must keep in 22 and 24 fathoms. Between Waluwe and Mago are the salt-pans of *Mazen*, a cove practicable only for long boats, and with a danger in the middle of it.—*N. B.* According to the *English Pilot*, a rock to the eastward of Mago is seen above water 7 miles from the coast: *M. D'Après*, from the report of several navigators who have sailed along this passage, is of opinion that this is only one of the straggling rocks of the Great Bassas, which lies nearer the shore than the rest; but he advises you nevertheless to be upon your guard.

From Mago to the Elephant they reckon 6 leagues to the N. E. THE ELEPHANT is a remarkable high rock, which becomes the more conspicuous as there is no other rock or hill near it; and its situation close to the sea makes it perceivable at a great distance. To the S. 5° E. of the Elephant are the Great Bassas.

THE GREAT BASSAS.

DIRECTIONS FOR SAILING BETWEEN DONDRA HEAD AND THE GREAT BASSAS.

BALE OF COTTON ROCK.

THE GREAT BASSAS, in $6^{\circ} 2'$ lat. North, are a cluster of rocks, upon which, according to the natives, there was formerly a small pagoda made of brass; they extend about $1\frac{1}{2}$ mile in length, and as much in breadth; the sea breaks very high on them, and some of the rocks are a considerable height above water; you must give them a good birth, coming no nearer than 34 or 35 fathoms, but never under 30, and in the night not under 40 fathoms. They lie 3 leagues from the coast, between which and this reef, you may sail ranging along the shore, in 8, 9, 10 and 12 fathoms; you are not however to approach the coast at more than 8, nor the Great Bassas nearer than 12 fathoms, till the Elephant is bearing N. N. W. and when you are come half way up the channel, steer E. N. E. or E. by N. if you are nearer the land, till you come into 30 fathoms, then bend your course N. E. to pass to the eastward of the Little Bassas.

Between Dondra Head and the Great Bassas there is deep water near the coast, as we have already seen; but in all this part you will not have soundings any where above 2 leagues, and in some places above 2 or 3 miles from the shore; you are not then to depend entirely on your lead in the night, but must keep a good look out.

Ships which are sailing for Dondra Head to the Great Bassas, in the S. W. Monsoon, having then a fair wind, always shape a course to go clear of the latter. In the N. E. Monsoon, being off the Great Bassas and bound to the westward, having likewise a fair wind, they direct their course to the Red Cliffs, or Dondra Head. A W. by S. course, from the Great Bassas, distance about 20 leagues, will bring them with Dondra Head; but trust not too much to your course, for the currents set then strongly to the S. W. and will carry you off the land, therefore you must keep the shore close on board, the more so as there is no danger within 2 or 3 leagues.

In coming from Dondra Head to the Great Bassas the *English Pilot* says you should steer E. S. E., and *M. D'Après* that you ought to steer East, which will carry you 8 leagues to the southward of the Great Bassas; and that he takes to be sufficient for the set of the currents to the northward, advising you to sound from time to time. Mr.

Nichelson

Nichelson differs from them both, being of opinion that a ship 2 or 3 leagues off Dondra Head may with great safety steer E. by N. which will carry her 4 or 5 leagues without the Great Bassas. The currents, which are very changeable in these parts, as often run to the westward as to the eastward, and much oftener to the South than to the North, they being in general south-westerly; this circumstance must render you cautious in regard to the reckoning of the distance from Dondra Head to the Great Bassas; this distance is 20 leagues, yet when you reckon you have sailed 15 or 16 leagues, you will then be opposite to the Great Bassas: several ships have even thought they had got no farther than 12 or 14 leagues.

The observation is not to be neglected both for the direction and the length of your course.

BEFORE we proceed farther on our description of the Coast of Ceylon, it seems necessary to give an account of the BALE OF COTTON ROCK; its position, from report, being relative to Point de Galle, connects it in some manner with the isle of Ceylon. We are going to transcribe a letter which was communicated by Governor *Cartier*, at Calcutta, to Captain *Lesley* of the *Orford* man of war. This letter had been written by Mr. *Callendar*, and upon it depend the existence and position of the Bale of Cotton Rock.

SIR,

"After being shipwrecked in the river here (of Calcutta), along with Captain *Dockerty*, on March 2d, 1767, I took my passage on board the *London* country ship for Bombay, and on the 28th of the same month the pilot left us. We had light airs and calms all the way down the Bay (of Bengal) with a strong current setting mostly to the eastward; and to the best of my remembrance, as I have had the misfortune to lose my journal, on the 5th of May, about . . . o'clock in the forenoon, we then steering south-easterly, with a variable light breeze from the northward, we saw something a-head of us, in appearance like a large bale of Cotton, being very white and round; it bore from us about S. S. E. distance about 2 miles. The sea being very smooth we kept our course as before we saw it, and by the time we had got an observation, it being then noon, the rock bore, I think, about East, or E. N. E. distance $\frac{1}{2}$ mile or less. The latitude, by the medium of 3 observations, was $5^{\circ} 22'$ North, and longitude from the meridian of Point Palmiras was about 51 miles East. At the same time we sounded, and had no ground at 170 fathoms: that afternoon we had an azimuth variation $00 14'$ East. When we went close past the rock, being then on the west side, it was of a dark brown, and had something like moss upon it. I think it may be about 40 feet long, and about half as broad, and not above 2 feet above the surface of the water. At 4 o'clock that afternoon we saw
a fail

a sail standing to the eastward, and at sun setting spoke with her, being a Portuguese ship from Point de Gall, bound to China, who informed us she was then one hundred leagues to the westward of her port, and had left it seven days with a fair wind, which had continued to the time she spoke with us. By comparing our accounts with hers, we were, I think, about 3 degrees or more to the eastward of them. As I observed before, we had a strong current setting to the eastward; the same was observed by them, and I suppose might set them in these seven days, one degree or better to the eastward of their account. We having left the land so long, I think the Portuguese account is more to be depended upon than ours, as they had a fair wind, and no allowance to make for lee-way.

"The Captain's name was *Widgeon*; the second officer was Captain of a ship when I left Bombay (I think her name was the *Diana*), and has got an account of this passage; his name is *Thomas Sberwood*, and I believe he gave an extract of every particular to one Mr. *Spencer*, who is now in Calcutta, and is employed in business with Captain *Wedderburn* of the *Bankfall*.—This is the most satisfactory account I can give you, Sir, as I have no extract of my journal left, nor any thing I can go by with any certainty; I hope you will be pleased to excuse what errors you may find in this account, when you come to compare it with any other.

I am, Sir, yours, &c.

"*Alexander Callendar.*"

"How navigation," observes Captain *Lefley*, "might be improved did but men in general take the smallest pains! What strange people these were that did not send a boat to this rock? By such a neglect they leave it a doubt but it might be a bale of cotton, which are frequent in these seas."

The account given by Mr. *Dalrymple*, page 33 of his Memoir, and received by him from Captain *William Smith*, late of the *Houghton*, does not agree entirely with the above letter.

"A rock in $5^{\circ} 22'$ North, 100 leagues from Point de Galle (but 110 leagues by a Portuguese vessel, seen same day in April 1767, which had just before seen Point de Galle). The rock is $1\frac{1}{2}$ or 2 feet above the surface of the water, steep to, about 12 feet broad and 20 feet long, smooth at the top, lying S. E. and N. W. about 3 ships length from it, no ground at 170 fathoms.—This was seen by Captain *Widgeon* of the ship *London*, belonging to *Abram* of Calcutta, the mates *Meldram* and *Sberwood*; *Meldram* is dead; *Sberwood* is captain of the *Diana* of Bombay. This extract from Mr. *Callendar*, a passenger aboard at that time, who was on the rock himself, who gave this to Major *Watson* at Calcutta."

Mr. *Dalrymple*, however, after having marked the Bale of Cotton Rock in lat. $5^{\circ} 22'$ North, and $5^{\circ} 30'$ East from Point de Galle, or about $85^{\circ} 25'$ from London, is of the same opinion with Captain *Lefley*, and doubts the existence of this danger.

THE EASTERN COAST OF CEYLON,

FROM THE ELEPHANT, OR THE GREAT BASSAS, TO TRINCOMALEY.

THE LITTLE BASSAS.

FROM the Elephant to Julius Nave the distance is 5 leagues N. E. by E.; in that interval you see two reefs with only 7 or 8 feet water on them, one near, and the other 2 miles off the shore. JULIUS NAVE is a high white sandy point close to the sea, within which you may safely anchor on a good bottom. The Little Bassas are separated from this point by a channel about 10 miles broad, through which one may sail in 5 fathoms; you have 6 or 7 near the coast, and $5\frac{1}{2}$ in the middle.

The LITTLE BASSAS are under water, and no part of their rocks is seen, but the sea generally breaks on them very high: by the appearance of the breakers they may be about a mile in length and as much in width, being the more dangerous as you find deep water close to them, no ground at 30 fathoms, and the next cast 16 within $1\frac{1}{2}$ mile of the breakers; they lie S. S. E. of Julius Nave and N. E. or N. E. $\frac{1}{4}$ E. 7 leagues from the Great Bassas: between the two, at about an equal distance, there is a small bank with only 8 fathoms on it, but no danger to fear; you may coast it along between the two Bassas, about $3\frac{1}{2}$ or 5 leagues off shore, in 35 or 36 fathoms water, though there is no trusting to soundings in this part.

Should the sea be uncommonly smooth as not to break on the Little Bassas, the best mark to know when you are near them is a pretty high hill on the shore, without any other near it; on the south side near its summit stands a conspicuous rock like a chimney on the top of a house, whence it is called CHIMNEY HILL; when this hill is on with the Little Bassas it bears exactly N. W. take notice also that these dangers bear E. $\frac{1}{4}$ S. from the Elephant: if you keep the Elephant W. $\frac{1}{4}$ or $\frac{1}{2}$ N. till Chimney Hill is brought to bear W. N. W. $\frac{1}{2}$ W. you will then be clear to the northward of the Little Bassas.

You must observe that farther in land to the northward of Chimney Hill, there is another not quite so high, which has upon, or near its north top, a rock rising up in the same manner as that on Chimney Hill, though much larger and resembling a pagoda; this is not to be distinguished from the other hills but by the following mark: when Chimney Hill bears N. W. it is then touching the north part of Pagoda Hill; and when it bears N. W. $\frac{1}{4}$ N. Pagoda Hill is shut in with it. The land hereabout is broken and very mountainous.

From Julius Nave Point to LOW BANK POINT, the course is N. E. by N. northerly, about $5\frac{1}{2}$ leagues; a sand bank runs 4 miles into the sea at Low Bank Point, so that you

must

must take care to keep wide of it: the anchorage is good in 12 or 13 fathoms all along this coast. Sixteen miles farther to the N. N. E. you come to AGAUS (called in the Charts *Aganis* and *Agui*), which is known by a small adjoining peak like a tower, with two small hummocks to the northward of it, and a cluster of cocoa-trees, close to the shore. This peak is the last high land you perceive near the sea till you come to Trincomalee. In coming from Low Bank Point you range along, 5 or 6 miles off in 25 fathoms, sand mixed with coral; the shore is bold, and you have 15 fathoms within a musket shot of it.

From Aganis to AREGAM, the coast is bearing N. by E. 4 leagues; off Aregam lies a reef which extends 2 miles in the offing: this place is known by two hillocks in land at a small distance from each other, and by a cluster of cocoa-trees, but not quite so large as that of Aganis; you coast it in 22 or 24 fathoms. Four leagues and a half N. by E. are reckoned from Aregam to POAWEGAM, called also *Tricule*, which is known by a grove of cocoa-trees, inclosing a Pagoda. The land to seaward is low, and mountainous in the country: there is a reef about one mile off shore: you must along this part keep in 22 fathoms, though it is not very good for anchoring, on account of the rocks scattered in several places.

The direction of the coast between Poawegam and Batecalo is N. by W. distance 8 leagues. To seaward between the two, the land continues to be low, and up in the country there are some very high mountains, one of which is called by the navigators FRIAR'S HOOD, on account of its resembling, at one extremity, that kind of head-dress; although this form is only perceived while it bears from the West to the South, for when the bearing is N. W. or N. N. W. its peak appears like the top of a great pyramid.

There is another mountain, 5 or 6 leagues to the south-eastward, which is not quite so high, but having a great resemblance to the Friar's-Hood, it is sometimes mistaken for it; this is called the *False Hood*.

The Friar's-Hood is the most remarkable mountain of Ceylon; ships fall often with it, and as often take their departure from it. Its latitude is $7^{\circ} 20'$ North.

BATECALO is known by the mouth of a small river, which cannot be seen till you are to the northward of it: it is very narrow, turns short round to the southward, and is parallel to the beach along shore. On the north side of the entrance, the Dutch have a small factory-house with a flag-staff on it, by which also this place may be known.

Captain *William Brereton*, of the Falmouth man of war, 1762, speaks thus of Batecalo: "The road is very safe during the S. W. Monsoon, as the winds are mostly off shore; and if they should come in from the sea, the rocky reef breaks off the swell, so that you ride with smooth water; the proper birth being the Friar's Hood S. S. W. and the river's mouth South $1\frac{1}{2}$ or 2 miles distant. There is a cluster of rocks about 3 miles to the northward of the river's mouth; bringing them West, you have a good birth in 6 or 7 fathoms, sand and gravel, latitude obs. in this road $7^{\circ} 51'$ North.

" The entrance of the river is very narrow ; on the bar you have no less than 6 feet at low water ; the tides rise 2 feet perpendicular ; high water on full and change N. W. and S. E.

" You may water at the island where the Dutch fort stands, and land your casks at the wharf and roll them to the well on the green ; it is necessary to carry funnels and buckets with gaskets to them, to draw the water up.—Wood may be cut on the banks of the river near the bar in any quantity.—The Dutch governor will sometimes supply you with a few bullocks ; but if you should find any difficulty in getting a sufficient quantity, you may send to the town of Metecalao and purchase refreshments there, which the inhabitants will supply you with, if you treat them civilly ; they are Indians, and have very little communication with any other Europeans but the Dutch ; however they seem desirous of cultivating a friendship, and opening a commerce with the English, which the Dutch endeavour to prevent by every means in their power.

" The Dutch fort stands on an island, on the west side of the river, about 5 miles from the mouth ; it is a small square work with 4 bastions mounting about 44 guns 12 pounders, with a garrison of about 50 Europeans and 100 Topasses."

Two leagues off Batecalo, you meet with a rocky bank or reef, on which the soundings are very uneven ; a small ship may sail between the land and the reef, but it is better to keep without. When the Friar's-Hood bears S. W. you may edge in towards the shore, and anchor against the river in 7 or 8 fathoms, a mile off the coast : several cocoa-trees scattered along the shore facilitate the knowledge of this part, from whence besides the land trenches to N. W. by N.

Mr. *Nichelson*, speaking of this coast, says, " I have passed Batecalo several times in the day-time within 2 or 3 miles of it, and had 19, 20, and 22 fathoms water, and saw nothing of the reef that both the English and the French talk so much of. We kept our lead constantly going, and a good look out with fair weather and smooth water, but saw nothing of it." But all these are not sufficient to shew the non-existence of a reef 3 miles farther to the eastward of the course followed ; it proves only that you may safely sail between the reef and the shore.

No regard should be paid to the irregular soundings in this part of the coast of Ceylon ; there are holes, in several places, having from 18 to 20 fathoms, and suddenly to 60 or 70, sometimes 100 fathoms, or perhaps no ground ; and afterwards in 2 or 3 casts, near the coast, from 7 and 8 to 40, 30, 25, or 20 fathoms. When you range along this great island you must remind this difference, and not be more surprised at it than at the currents which set on or off the shore with little regularity. Ships bound to Point Pedro, or other places to the northward, ought from Batecalo to keep the coast close on board, for if once they get off the land they cannot easily regain it. Thereabout there is little or no current in shore, but a ship in the offing will find a strong current setting to the N. N. E. which prevents her from fetching the coast again.

From

From Batecalo to Venloos the coast lies N. W. by N. distance about 9 leagues; the land between them is low and woody. Small vessels may coast it in 10 or 12 fathoms, but great ships must keep out in 20 and 25 fathoms, 2 or 3 leagues off shore, this will carry them clear of all danger.

VENLOOS (Vendelos) is a small bay on the north side of a steep rocky point of land; it may be known by a little mountain which lies a long way in land, and seems to be in the middle of the plain; this is called the *Sugar-loaf*, from its great resemblance to the top of a sugar-loaf broke off; southward of it at some distance there are two other hills, farther in the country. When the sugar-loaf bears W. $\frac{1}{2}$ S. you are abreast of Venloos Bay.

From Venloos Bay to Provedien Island the course is N. N. W. $\frac{1}{2}$ or $\frac{3}{4}$ W. $3\frac{1}{2}$ leagues; the land between them lies rounding in a bight, and the ground foul, which makes it bad anchoring: here the soundings are very irregular, and in shore the bottom rocky; keeping it between 20 and 30 fathoms, with an offing of 2 or 3 leagues, carries you clear of all danger.

PROVEDIEN ISLAND is a white rock close to the land, appearing at 3 or 4 miles distance like the sail of a sampan or country vessel, so that it may be easily known; the coast is low and woody; to the seaward steep, and with rocks of an iron colour; it continues foul for 3 or 4 leagues farther to the northward. From this island to the S. E. point of the great bay of Trincomalee they reckon 7 or 8 leagues N. N. W. $\frac{1}{2}$ West. The whole coast is low and woody, with a fine sandy beach: by keeping in from 18 to 22 fathoms, 3 or 4 miles off shore, you have nothing to fear.

The south-east point of Trincomalee Bay is low, even, and woody; it is called FOUL-POINT after a dangerous rocky reef which, from its extremity runs out N. N. E. above one mile; 3 or 4 leagues to the southward of the point is good anchorage in 14 or 15 fathoms, and no danger if you go into 10 or 12, and thence to the point it is a clear sandy bottom; but you must not come nearer the point than 14 or 15 fathoms; when Round Island is a sail's breadth open to the southward of Marble Point, (both within the bay) you are clear of all the dangers round Foul Point.

From Foul Point to the FLAG-STAFF Point at Trincomalee the coast lies N. W. $\frac{1}{2}$ W. distance 8 or 9 miles. You will carry soundings half that way from 15, 20, 30, 35, and 40 fathoms, then no ground until you come within a mile of the Flag-staff Point, when you have 45 and 50 fathoms, and shoal gradually as you approach the shore.

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DESCRIPTION OF THE
GREAT BAY OF TRINCOMALEY,
WITH SAILING INSTRUCTIONS, &c. - FROM M. NICHOLSON.

TRINCOMALEY (or *Trincoemmalé* and *Trinquemalé*) may be considered as one of the finest harbours in India; as it is entirely surrounded with the land, you lie there secured from all the winds that can blow; the bottom is clear, with good holding ground, and it is spacious enough to contain a 1000 ships, having besides many convenient coves for careening, &c. There are also several watering places: the ships that take their water in Back Bay, fill it in the fort, where the Dutch have built a wooden pier to facilitate the landing; and those who lie in the harbour must fill it at the well in the town, where they will have a quarter of a mile to roll their casks.

Refreshments for present use may be got here, but in small quantities, and not more than sufficient to supply two men of war; the only provisions to be had are beef, buffalo, hogs and a few fowls: little or no vegetables, and very dear; as for sea-provisions, there are none of any kind to be procured.

Although the situation of this port makes it a most convenient place for trade, yet scarce any is carried on at Trincomaley, and there are no ships belonging to the place. The Dutch European ships call here in the months of July or August, transact their business, and as they generally lie in the back bay, they depart before the beginning of the N. E. Monsoon.

The latitude of Flag-Staff Point, by several observations, is $8^{\circ} 32'$ North*; it flows here on the full and change, East and West, or 6 hours, the perpendicular rise being 3 feet; the tide has little motion, but on the south side of the bay, where it runs at spring tides, the ebb $1\frac{1}{2}$ knot to the eastward, and the flood a knot to the westward; the flood 4 hours and the ebb 8 hours.

The neighbouring land is very remarkable, rising very high all round the harbour, and in no other part near it, either to the northward or the southward. To the South of that high land surrounding the harbour, is the great bay of Trincomaley which extends 6 or 7 miles North and South, and 7 or 8 from East to West. It is very deep all over, and has no soundings but on the south shore, which is all low land, and where 4 several rivers have their openings, but all of them navigable only for small boats.

Flag-Staff Point appears the more conspicuous in being very high, steep, and covered with trees; it is narrow, and projects into the sea about $\frac{3}{4}$ of a mile, where it is cut off abruptly in a perpendicular; at the foot and close to it there is a rock about the height of a ship's hull. On the top of this point the Dutch have a look-out house, whereon they

* Its longitude East from London is $81^{\circ} 17'$ according to M. *D'Apris*, $81^{\circ} 40'$ according to *Nichelson*, and $81^{\circ} 51'$ according to Mr. *Dalrymple*.

hoist their flag when they descry any ships in the offing. There is also on the middle of the point a very large and remarkable tree, which, when in one with Chapel Point, is a mark for clearing the shoal to the S. W. of Norway Island.

To the northward of Flag-Staff Point, between it and Elizabeth Point, there is a spacious and safe bay, with a smooth sandy beach, and good landing every where; it is called BACK-BAY; in the S. W. Monsoon ships lie there in a sandy bottom, with gradual soundings towards the shore: you may anchor any where in 7, 12, or 15 fathoms, from $\frac{1}{2}$ to $\frac{3}{4}$ a mile off shore; Flag-Staff Point bearing from S. E. by S. to S. by E.; here is plenty of water and wood.

The first danger to be guarded against, in entering the bay, when you come from the southward, is Foul Point, which has been described in the preceding section; we have said that when *Round-Island* is a sail's breadth open to the southward of *Marble Point* you were clear of all danger; Marble Point will then bear W. by S. $\frac{1}{2}$ S. with these marks you may run up the bay, until you open the harbour's mouth, but you have no soundings in this track after you are to the westward of *Norway Island*.

The course into the harbour is N. W. by N. keeping mid-way between Round Island and *Elephant Island*, where you still have no soundings.

Come not near the west point of Elephant Island, for about a cable's length N. W. by W. from it there are some dangerous rocks, with only 6 feet water on them; to sail clear of these, you must keep the white house that stands on the top of *Osnaburg Point*, 2 sails breadth open with Elephant fort Point. The harbour's mouth is very narrow, being not more than two cables' length over, with 30 fathoms in the middle between both points; these are steep to, so that you may go within a ship's length of either, and run boldly in, as there is no danger but what is visible.

When you have passed the narrow entrance, you come into a fine spacious harbour, where ships lie sheltered from all winds; the bottom is clear, with good holding ground; but right in the middle of this harbour lies a dangerous shoal called *Tork Shoal*, on which there is not above 5 feet water; to avoid it you must keep Round Island a sail's breadth open with Osnaburg Point until the flag-staff or Flag-staff Point is brought upon the gap of the wood at the town; then you are clear of it, and may run up towards the town, to anchor where you please, and in what depth you choose from 17 to 8 fathoms.

DIRECTIONS FOR SAILING INTO TRINCOMALEY HARBOUR,

WHEN YOU COME FROM THE NORTHWARD.

YOU may pass by Pigeon Island, within $1\frac{1}{2}$, or 2 miles, in 21, 22, or 24 fathoms.

What is called *Pigeon Island* is a cluster of rocks above and under water, the outermost of which is the largest and the highest, and has several green trees and shrubs; between it and the main there is no passage, on account of the rocks both above and under

under water; $1\frac{1}{2}$ mile from the island you have 22 fathoms, and coming towards it 21, 19, 17, 16, soft ground, within $\frac{1}{2}$ a mile of it. This island bears from Flag-Staff Point N. by W. $\frac{1}{2}$ W., 12 or 13 miles; when you have 36 or 38 fathoms off Pigeon Island, you are just at the edge of the bank, and the next cast may be 40 or 42 fathoms, perhaps no ground; if it happens to be calm, or the current should prove against you, take care to anchor, rather than be set off the bank.

From Pigeon Island you may range it along as far as Elizabeth Point, though the soundings are a little irregular between them. *Elizabeth Point* is the north point of Trincomalee Back-Bay, off which, $\frac{1}{4}$ of a mile from shore, two rocks are seen above water, about the bigness of a boat, with about 8 fathoms close to them; and from them to seaward, runs out a rocky ledge under water for a $\frac{1}{4}$ of a mile, having 7 or 8 fathoms close to it, both to the northward and southward: therefore you must come no nearer these rocks than 12 or 13 fathoms, nor approach the shore to the northward of them nearer than 18 or 17, the bottom being foul, and the depth very irregular. These rocks bear from the outer part of Pigeon Island S. by E. $\frac{1}{2}$ E. 9 or 10 miles, and from Flag-Staff Point N. by W. $\frac{1}{2}$ W. 3 or 4 miles. If you keep *Chapel Point* just open with Flag-Staff Point, it will bear South a little westerly, and this mark will carry you clear of all danger, from these rocks in 12 and 13 fathoms water. But if you keep out in 25 or 30, between them and Flag-Staff Point you will soon lose soundings, for they extend only 2 miles from the coast, and not above $\frac{1}{2}$ of a mile off Flag-Staff Point.

Between this point and Chapel Point there are several rocks above water, and pretty steep to, which run out some distance into the sea; and a good quarter of a mile off Chapel Point you meet with another rock above water, about the bigness of a small boat, from which a rocky reef, under water, stretches to seaward a large cable's length: however the white mark on the inside of Elizabeth Point, kept a sail's breadth open with Flag-Staff Point, carries you clear of all danger, in 18, 20, or 22 fathoms.

Being past the rock and reef off Chapel Point, you may steer up the bay; and keeping Marble Point open to the northward of Round Island, until you open the harbour's mouth, it carries you perfectly safe, but you will have no soundings: then keep midway between Round Island and Elephant Island, and steer in for the harbour's mouth N. W. by W. conforming yourself to the directions already given for coming in from the southward.

MARKS FOR TURNING INTO TRINCOMALEY HARBOUR.

A SHIP off Foul Point, standing to the northward with the wind westerly, may borrow on the back of Foul Point shoal into 14 or 15 fathoms; and when Marble Point is open to the northward of Round Island, she may keep up for Flag-Staff Point if the wind will let her; for at a considerable space between the two points, no ground is found;

found; though you have gradual soundings for 1 or 1½ mile to the northward of Foul Point, from 4 to 36 fathoms, on the edge of the bank, when Flag-Staff Point is bearing W. ½ N. and Foul Point S. ½ E. and the next cast no ground. Therefore the best way to get into the harbour with the wind off shore, is to work up under Flag-Staff Point, and to its northward, taking care not to stand to the southward of it so as to open the great bay, until you can pass Chapel Point reef; and that on account of the strong outlet which generally accompanies the westerly winds. In standing to the northward there is nothing to fear but what you see. Between the rocks off Elizabeth Point and Flag-Staff Point, you may come into 8 or 7 fathoms, the bottom being clear and sandy, with gradual soundings from 20 to 7 fathoms. When you tack, and stand to the southward, keep as close as possible to Flag-Staff Point, and borrow as near the rock and reef off Chapel Point as you can, conforming yourself to the marks already mentioned.

Towards the south shore you are not to stand in with less than 20 fathoms, as it is all rocky and bad ground between *Foul Point* and *Norway Island*, with very irregular soundings, decreasing 4, 5, or 6 fathoms, at a cast; and about half way lies a very dangerous rock, with only 8 feet water on it; it is called the *Northeast Rock* from a store ship of that name lost there in 1748, and its marks are Flag-Staff Point N. 35° W. a hill in the country, and Marble Point touching W. 10° S. *Norway Island* S. 33° W. Foul-Point E. 10° N. You have 8 and 9 fathoms all round this rock, and 15 or 18 a little way without it. In short it is not advisable to stand further to the southward, until you get well to the westward of *Norway Island*, than just to bring Round Island on, or touching Marble Point. With these bearings your soundings will be from 18 to 20, 22, and 24 fathoms, all the way between Foul Point and *Norway Island*, and 13, 14 or 15, when abreast of the latter.

Between the rocks off Chapel Point and Elephant Island, it is so steep to that you lose your soundings all at once. When you tack and stand again to the southward, be careful how you approach *Norway Island*, which is encompassed with rocks above and under water, and attend to the marks above given for keeping clear of the dangers on its north side.

When you have weathered *Norway Island*, in standing farther to the southward of the great-bay, you are to take care of a large flat *Sand-bank* on which there are only 3, 3½ and 3¾ fathoms; the marks to clear it are to keep the great tree that stands on the middle of Flag-Staff Point, on with Chapel Point, or just touching it, and to bring Pigeon's Island in one with the small island in the mouth of the lake, called *Bird's Island*. In the southward of the Great-Bay, no soundings are to be got but within a mile of the shore; however you must keep the lead going, for it shoals very suddenly; you may have 35 or 40 fathoms the first cast, 18 or 20 the next, and 10 or 12 the third;

this is the least depth you ought to go into with a great ship, as in many places there is not above 2 cables' length from 10 to 4 fathoms.

The most gradual soundings on the south side of the bay are off the *River Cotiar*, and you may anchor there in 10 or 12 fathoms, soft muddy bottom, and good holding ground, the river's mouth bearing S. by E. about $\frac{1}{4}$ of a mile; it is very smooth lying in, during the S. W. Monsoon. Small ships may anchor in 7, 8, or 9 fathoms, any where along shore between Cotiar River, and Sambor or the easternmost river, in good ground, mud, and smooth water.

THE EASTERN COAST OF CEYLON,

FROM FLAG-STAFF POINT TO POINT PEDRO.

BEING 3 or 4 miles to the eastward of Flag-Staff Point, a N. N. W. course will carry you clear of PIGEON ISLAND, just now described, which you may pass 2 or 3 leagues off in 22 fathoms; from Pigeon Island to *River Cruz* is 4 miles; from this river to *Rio Carti*, or *Cardies*, the course is N. W. about 4 leagues, the coast being low and even, with anchorage 4 miles off shore in 16, 18, or 20 fathoms.

From Rio Carti to *Molodiva*, or the MOLEWAL of the Charts, the distance is about $5\frac{1}{2}$ leagues to the N. W. you may anchor between the two places in very good holding ground.

From Molewal a shoal extends 3 leagues into the sea, which you must not approach nearer than 9 or 10 fathoms; but as it is very steep to, you ought to keep 4 leagues from the shore in 11 and 12 fathoms, coral; when you are almost beyond this danger, the bottom is sand and shells, mixed with gravel and coral; and 5 leagues off shore, sand, with a few shells. Having doubled the shoal, you must, in order to fetch Point Pedro, haul in for the coast, where there is nothing to fear, so long as you continue in 6 fathoms, sandy ground; but you are to take a greater offing as you near the point, which is surrounded with dangers.

From Pigeon's Island to clear Molewal shoal, the course, says Mr. *Nichelson*, is N. N. W. 10 or 11 leagues, taking care to keep in from 18 to 20, 22 or 24 fathoms. Having run that distance, and being in those soundings, you may then steer N. N. W. $\frac{1}{4}$ W. or N. W. by N. 14 or 15 leagues, according as you find the depth of water, which must not be less than 20 fathoms.

Between Molewal and Point Pedro they reckon 14 leagues N. W., and N. W. by N. you may coast it in the manner heretofore prescribed, in order to avoid a rock under water with only 9 feet, and a bank off the shore on which are very unequal soundings: the rock bears from Point Pedro E. by N. $2\frac{1}{4}$ or 3 leagues.

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In sailing from the southward, if you meet with contrary winds, so that you cannot coast it at the proper distance, you had better sail without the bank and rock. Keep 4 leagues offing in 9 or 10 fathoms, until POINT PEDRO bears W. S. W. then stand to the westward, but nothing to the southward, till that point is bearing S. W. otherwise you have unequal soundings that decrease sometimes 2 fathoms at a cast, instead of which you will find no less than $4\frac{1}{2}$ or 5, by conforming to this direction. However, if by neglect you find yourself in 4 fathoms, sand and rocks, you must then haul off, until the soundings are sand mixed with shells and coral, in $5\frac{1}{2}$ or 6 fathoms.

When Point Pedro bears S. by E. $4\frac{1}{2}$ leagues off, you may anchor there in $4\frac{1}{2}$ fathoms, fine sand; but when it is bearing S. by W. if you would approach the coast, and be obliged to turn it, to avoid all danger, take care in standing off not to bring it more southerly than S. S. W.

PALKS BAY, OR THE GULF,

BETWEEN THE NORTH-WEST PART OF CEYLON AND INDIA,

From the Dutch Description.

FROM Point Pedro, the northernmost extremity of Ceylon in $9^{\circ} 48'$ lat. North, to Point Calymere, on the continent of India, the distance is about 15 leagues N. W. $\frac{1}{2}$ N. this makes the entrance of the gulf or bay known by the name of Governor PALK, and which extends to the southward as far as Adam's Bridge.

There are three openings into that entrance: the first, called *Baker's Channel*, is about 5 and 6 miles broad, N. E. by N. and S. W. by S. between Calymere Bank and another to the southward of it, called Middle Bank; its depth $4\frac{1}{2}$ fathoms, sand: on the edge of the banks you find only $3\frac{1}{2}$, which on the Calymere side are gradually decreasing towards the land, in a space of 3 leagues, to 3, 2, 1, and $\frac{1}{2}$ fathoms. The second opening, called *Kelfal's Channel*, lies to the south-eastward of the middle bank, in a N. E. and S. W. direction; it has $4\frac{1}{2}$ and 4 fathoms water, and its width is about 3 miles.

The third opening, which is named *Palk's Straits*, is about 6 leagues broad, from the sand bank southward of Kelfal's Channel, to the nearest part of Ceylon; the least water, in the middle part of it, is 4 fathoms, fine sand. We must observe that Palk's Bay is very shallow all over, the soundings running generally from 6 to 7 fathoms, which are gradually decreasing to 5, 4, 3, and 2 fathoms towards the Indian shore.

Without the bay on its north side, and round Point Calymere, is CALYMERE REEF, which extends between 4 and 5 leagues to the eastward. On this reef the soundings are from $4\frac{1}{2}$ to 3 fathoms, and in some spots, at the entrance of Baker's Channel, only $2\frac{1}{2}$; on the eastern edge you have from $5\frac{1}{2}$ to 6 and 7 fathoms, sand or mud.

POINT PEDRO is a very low land covered with shrubs and bushes, and running into the sea in such a manner that at some distance it appears like the wrecks of old ships in the water; its north part is known by a church and some houses, the land trenching to the westward.

From Point Pedro, to *Hamenhiel Fort*, on the opposite side of Ceylon, the course is W. by S. and W. S. W. 8 or 9 leagues; this fort stands on a very small island in the middle of the larger islands which lie near the westernmost coast of Ceylon. When you are about 20 miles from Point Pedro, you perceive Valy Point, to which you must give a birth of 9 or 10 miles, on account of a bank with only 3 fathoms upon it, so that the north-west point must be passed before you can perceive Hamenhiel Fort; and when this point bears S. E. by E. then the island is bearing S. by W. and S. S. W. from whence you are to steer towards it to 4 and $4\frac{1}{2}$ fathoms, bringing the fort S. by E. to anchor there. In May, June, and July, the S. S. W. winds are very violent in these parts, and the tides very strong.

From Hamenhiel to *Jafanapatam* the distance is 5 leagues to the eastward; but the channel having but 4 feet water in some places, is only frequented by the country boats.

From Jafanapatam to *Calimony Point* the course is E. S. E. 3 leagues, with a depth of 12 or 13 feet water: near the point there is a rock with only $3\frac{1}{2}$ feet upon it, which you pass at a ship's length: the anchorage at Calimony is in $3\frac{1}{2}$ fathoms, 2 miles off shore.

Three leagues to S. W. by S. of Calimony lies *Polan-diva*, called also *Enchuryser* and *Cat-Island*; the fair way is in 5 or 6 fathoms, fine sand; and the island has a sand-bank which stretches one mile into the sea.

From Cat-Island to the islands called the *Brothers*, the distance is about 5 miles S. S. W.: you are not to approach the Brothers nearer than 2 miles, on account of a rocky reef that stretches to the westward.

MANAR ISLAND lies 20 miles to the southward of the Brothers. In the fair way, near the Brothers, you have 5 and 6 fathoms, but the depth decreases very much near Manar, and when you approach it, you descry a church which the Portuguese called *Madre de Deos*; this church bearing S. W. you may come as near as you can, and will have 10 or 12 feet water at a cannon shot from shore.

From the westernmost point of Manar to RAMANANCOR Island, the distance is about $12\frac{1}{2}$ leagues W. by N. the course is first N. W. by N. 20 miles, to come into 6 fathoms, ooze; then steering to coast along Ramanancor, you find 7 fathoms; when you are come to the north-east point of this island you must keep the lead constantly going, for so soon as you have got into 5 fathoms, the depth decreases $\frac{1}{2}$ a fathom at each cast.

From this north-east point to *Catche diva*, or *Chagadina* Island, the course is E. N. E. $4\frac{1}{2}$ leagues; and from the same point to Cow Island they reckon 9 leagues, on the

same rhumb; in the fair way you have 6 or 7 fathoms. *Cow Island*, named also *Delft Island*, the westernmost of the islands on the north-west end of Ceylon, is about 7 miles long, with a reef at its west point, and lies 10 or 11 miles S. W. by S. from Hamenhiel Fort.

From this fort to *Devypatam*, on the opposite side of the bay, the course is S. W. by S. nearly 26 or 27 leagues; at about $6\frac{1}{2}$ leagues from the fort you meet with a sand bank having only 9 or 10 feet water upon it; in approaching the coast you must have frequent recourse to your lead, as the depth is only $2\frac{1}{2}$ and 2 fathoms, 5 or 6 miles from shore.

From Hamenhiel Fort to Calymere Reef, the course is N. N. E. about 12 leagues; you must not approach the reef, nor Point Calymere, nearer than 5 fathoms; beyond the point you may range along shore in 4 or 5 fathoms, there being no danger; when the pagoda which stands on that point is bearing W. S. W. and S. W. you have from $4\frac{1}{2}$ to 5 fathoms, and at 5 large leagues to the N. E. 14 and 15 fathoms.

THE COAST OF COROMANDEL.

DESCRIPTION OF THE COAST FROM POINT CALYMERE TO PONDICHERRY.

NEGAPATAM AND SHOAL—KARICAL—TRANQUEBAR—PORTO NOVO, &c.

FROM Point Pedro to Point Calymere, where the Coast of Coromandel begins, the distance, as we have already observed, is about 15 leagues N. W. $\frac{1}{2}$ N. and round the latter point lies Calymere reef, described in the preceding article. The safe course towards Point Calymere is N. N. W. on account of the reef, and the depth is all along 9 or 10 fathoms.

The ships, says M. *D'Après*, who, after coasting the Isle of Ceylon, cross from Molewal, or from Point Pedro to the Coast of Coromandel, almost always make the land sooner than they reckon, because the currents set to the N. N. W. very strong, and carry them into Palk's Bay; so that many navigators who, to get sight of the coast, directed their course to the northward of Tranquebar have made the land to the southward of Negapatam; and several have run ashore in the night, for want of taking soundings. We own that the contrary has happened to some, that is to say, they have been set to the eastward, but these examples are not frequent, whereas the others are very common.

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In crossing from Ceylon to the Coast of Coromandel, Mr. *Nichelson* recommends to keep well to the westward, and to make the land about Negapatam, on account of the westerly winds and of the strong northerly currents: the first blowing very strong off this land in the S. W. Monsoons, prevent ships from making the coast; and the currents will frequently horse a ship to the northward in a surprising manner: he adds that many ships, by not observing this precaution, have been driven to the northward of the port to which they were bound.

Being abreast of Point Pedro, in 20 or 24 fathoms, you will soon deepen your water to 28, 30, 35, 40, and 50 fathoms, and then no ground; when you are come into the depth of 30 or 35, you may haul up N. W. or N. W. by W. in order to get hold of the Indian shore about Negapatam, and near midway you will lose soundings. The course is N. 42° W. 25 or 27 leagues.

On POINT CALYMERE stands a pagoda which may be seen 4 or 5 leagues off in clear weather; $\frac{1}{4}$ of a mile to the northward of it is a little river, and on its bank a large village surrounded with trees, where a trade is carried on in tobacco and rice. The mouth of this river does not appear at a distance, and its bar has but 3 feet water, so that only very small vessels can go into it. You anchor about a league from its entrance, with the pagoda S. W. by W. the ground to the northward being very soft mud, and not fit to anchor in.

From Calymere to Negapatam the course is North about 6 leagues; between the two you perceive a thick wood with small bushes without number. There is nothing else remarkable but a church about a league to the southward of Negapatam, that is built on the side of a small river which is not seen in coasting along, and as there are not above 4 feet on the bar, we shall take no farther notice of it.

NEGAPATAM was before the late war the most considerable place possessed by the Dutch on the coast of Coromandel; the English took it in November 1781, and it was ceded to Great-Britain by the last treaty of peace. It had a considerable trade, though very few vessels did belong to the place. Its fortifications are good, and the citadel is a regular pentagon, with wet ditches. The town lies to the northward of the citadel, near which is the mouth of a little river, capable of receiving small country vessels; it has a north and south entrance, the land between them being an island; the boats use the windward entrance to come out, and the leeward one to return, according to the Monsoon. On the north side of this river is a strong battery to which boats entering must go within the length of their oars, and the landing place is close to it: there is a bar at the mouth of the river, which, in bad weather, breaks very much, and becomes dangerous.

The watering place is about $\frac{1}{2}$ a mile up the river, at a great tank entirely commanded by the citadel; the watering there would be both troublesome and tedious without the assistance of the natives and their boats. Fresh provisions for present use may be had at

Negapatam, with vegetables, fruits, &c. sufficient to supply a squadron of men of war; but no kind of sea provision except rice; and fire-wood is a scarce article.

To the northward of the town is a great black pagoda, called *China Pagoda*, on which is erected a flag-staff; this is the first object to be seen on this part of the coast, which is very low, with many drowned lands, so that it must not be ranged along nearer than at least 7 miles, as you are apt to mistake them for the sea shore. The flag on the China Pagoda can be well descried from the deck, at 6 leagues distance in 14 or 13 fathoms, bearing W. N. W. You anchor abreast of Negapatam in 6 or 7 fathoms, clear and good holding ground, the flag-staff bearing W. $\frac{1}{2}$ S. and the highest of the 4 pagodas to the northward N. W. $\frac{1}{2}$ N. off shore $2\frac{1}{2}$ or 3 miles.

To the south-eastward of the town is the NEGAPATAM SHOAL, which, according to the survey made by the masters of his Majesty's * squadron 3d of August 1781, extends above 5 miles in length N. by E. and S. by W. nearly, and not one mile in width; the general depth on the edge is from 18 and 19 feet to 21, 24, and in several places 30 feet, sand, and towards the north part, hard sand: from its south end to the shore, it is about $4\frac{1}{2}$ miles, with a depth of water from 3 to $3\frac{1}{2}$ fathoms in mid-channel, then 4, $4\frac{1}{2}$ and 5 close to the shoal: the distance between the north end and the coast is 5 or 6 miles, with 3, $\frac{1}{2}$ less than 3 fathoms near mid-channel, 4 and 5 close to the shoal. The north part of it bears S. S. W. southerly, from Negapatam, distant 8 miles; from the Tree on the sand-hill 6 miles to the southward of Negapatam, the north part bears East, and the south part S. E. $\frac{1}{2}$ E.

There is less current off this part than on any other of the Coast of Coromandel; it generally goes with the wind, and increases as you stand to the northward.

From Negapatam to Karical is about $3\frac{1}{2}$ leagues, the course N. 5° W. in coasting you keep in 6 or 7 fathoms. Between the two runs the River Naghor, wherein a trade is carried on in chintz and rice; the mosque with 4 white pyramids, which may be seen very far off at sea, renders this place very remarkable.

KARICAL is a settlement of the French, which, with the places depending on it (the most important of which is *Teroo-maley-zayen*, 4 miles to the southward) was granted to them by the King of Tanjore in 1739. It carries on a great linen trade. Two rivers, both navigable branches of the Cavery, bend their course through this district, and fertilize the country, which abounds in rice and other provisions.

The fort of Karical is built on the northernmost side of a river, whose mouth is formed by a narrow point of sand, which extends along the coast, so that its entrance being parallel with it, cannot be distinguished far off. The other river, called Coluncherry, is $\frac{1}{4}$ of a league to the southward; and that of Tiroomaley, half a league farther South, opens likewise towards the North, as indeed do almost all the rivers on this coast.

* The *Exeter*, *Burford*, *Superb*, *Eagle*, and *Worcester*.

The bar which shuts up those of Karical and Tiroomaley hinders middling ships from entering, so that only boats and chilingas can pass them; and then it must be at high water. You anchor before Karical in 5 or 6 fathoms, and the marks for anchoring vary according to the Monsoon. In the southerly Monsoon you bring the flag-staff to bear W. S. W. In the northern it is to be brought to bear West: by this means the passage becomes easier to the boats going and coming.

From Karical to Tranquebar the distance is $1\frac{1}{2}$ league N. 4° W. You keep along shore in 6 or 7 fathoms, but in approaching the fort of Tranquebar, you must stand off a little more on account of a bank near the river; this bank does not project much, and provided you keep always in the above depth you have nothing to fear.

TRANQUEBAR, or *Trankbar*, is the chief settlement belonging to the Danes in India, the Town called Daneborg is very neat, and the fort remarkable by its extraordinary whiteness, seen at a great distance, and which they take care to keep so. The Indians call this place *Tarangam-paddoo*, whence is corruptly derived the name of Tranquebar.

Two leagues and a half to the northward of Tranquebar is *Caverypatam*, at the mouth of the river called New Cavery, with a kind of fortress without bastions; and just by stand two small pagodas very near the shore.

The small river of *Tiroomaley Wasbil* is 2 leagues North of Caverypatam; it takes its name from a pagoda that is seen inland; off its mouth there is a bank about a mile distant, but which is not dangerous, as the depth gradually decreases as you approach it. The land to the northward of the river is somewhat higher than the rest of the coast, which from the Calymere Pagoda, is only perceived as it were by its trees and buildings. In coasting about a league off shore, you have 9 and 10 fathoms water.

They reckon $3\frac{1}{2}$ leagues from the latter river to that of COLEROON, named by the Indians *Kolram*, at the mouth of which is a small island with the fort of DEVICORTA, belonging to the English. This mouth is known by a thick level wood near the sea shore, it is called *Coleroon Wood*, and at some distance at sea it appears like a low island, whose greatest height is in the middle. In this part are to be seen up in the country four remarkable buildings, they are the four famous pagodas known by the name of SHALAMBRON or *Chalamberam*; when they appear just touching the south part of Coleroon Wood they bear W. $\frac{1}{2}$ N. and you have 25 fathoms 3 leagues off the shore; when on the middle of the wood, they are then bearing due West; but if you are well in shore they will not be seen on account of the wood, until you open them to the northward, when they will bear W. by S. $\frac{1}{2}$ S.

The south side of the entrance of Coleroon River seems to form a point, especially when you come from the southward and sail near it, because the coast, whose direction was hitherto North, forms an elbow and extends $3\frac{1}{2}$ leagues to the N. N. W. as far as Porto-Novo. The land is low and even, and has nothing remarkable but the buildings above mentioned.

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To bring under a general view the detail we have now given of this part of the coast, it might be observed that between Negapatam and Coleroon River, the coast lies North and South nearly, in a distance of about 14 leagues; that it is low, woody, and all the way free from danger, until you come near the Coleroon, with regular soundings as you approach the shore: when you are 6 or 7 leagues off the land there are none to be got without 45 and 50 fathoms, as beyond that depth the bank goes off suddenly to no soundings. In 40 fathoms you will be about 5 leagues off the coast, towards which it shoals gradually to 10 or 11, about 3, 4 or 5 miles from shore. You may coast it all the way in that depth, with an offing of about 2 leagues, till you come to the Coleroon.

At the mouth of the Coleroon a shoal extends $4\frac{1}{2}$ or 5 miles from the shore, and stretching along to the southward, joins with the shore about the south part of Coleroon Wood: this is called COLEROON SHOAL, a great part of which is dry, and generally with very high breakers; it is so steep that from 11 or 12 fathoms you will in some places fall suddenly into 3 and 4, and a great ship ought not to come nearer this dangerous reef than 16 or 15 fathoms in the night, and 14 or 13 in the day. The King's ship *Falmouth*, Captain *Brereton*, narrowly escaped being lost on the Coleroon Shoal in the night; they were standing for it, with intention to tack in 12 fathoms, but missing stays, they found themselves in $4\frac{1}{2}$ before they could put about, and were obliged to anchor: in the morning, the weather being moderate, they warped off and came to sail.

PORTO-NOVO, called by the Indians *Paranguietta*, and by the Moors *Mabmoud-bunder*, was formerly a place of great trade, where the French and the Dutch had factories; here is a little river navigable only for small country vessels; fresh water is filled out of a tank, a little way up this river, but it is bad, brackish, and apt to give the flux. The road of Porto Novo being sheltered by the Coleroon Shoal to the south-eastward, from the great swell you find in every other part of the coast, is by much the smoothest and safest on the Coromandel shore; there is scarce any current, the bottom is clear, muddy and good holding ground; you may anchor there in 6 fathoms water; the flag-staff at Porto-Novo W. $\frac{1}{2}$ N. and the southernmost of the 4 Shalambon Pagodas S. W. $\frac{1}{4}$ W. off shore 2 miles.

In July, sooner or later, from Tiroomaley Wafhil to Porto Novo W. $\frac{1}{2}$ N. the waters are thick and muddy, like those of an inundation; it appears the more surprising, as it seldom rains on the Coast of Coromandel at that time of the year, but this foul water proceeds from the river Cavery, which comes down from the mountains of the Gauts on the Coast of Malabar, where the rains are then very frequent.

From Porto Novo to FORT ST. DAVID, belonging to the English, but now in ruins, the coast lies N. by E. $6\frac{1}{2}$ leagues; you may coast it along in 8, 9, or 10 fathoms, about a league off shore; a little to the northward of Porto Novo begins the white sand-hills,

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which

which extend along the coast, and have at that distance the appearance of so many islands.

Fort St. David was situated on the edge of the coast, and a small bank lies about $\frac{1}{2}$ a mile or more from it; a quarter of a league to the southward you see the town of CUDDALORE, whose shallow river and bar boats only can enter: you anchor there in $6\frac{1}{2}$ fathoms, clear and good holding ground; Cuddalore bar W. S. W. the flag-staff N. W. $\frac{3}{4}$ N. the ruins of Fort St. David N. N. W. $\frac{1}{4}$ W. off shore $1\frac{1}{2}$ mile; the current setting to the northward at the rate of a mile *per* hour, as it always does off this place in the S. W. monsoon: you may be supplied here with vegetables, fruits, and plenty of fresh provisions.

From Fort St. David to Pondicherry the coast lies N. N. E. easterly 14 miles; you can range it along in 10, 12, or 14 fathoms, 4, 5, or 6 leagues off shore, and without that no soundings. There is nothing remarkable between the two places; the land is low and sandy to seaward, and woody towards the country.

DESCRIPTION OF THE COAST FROM PONDICHERRY TO MADRAS.

ALLEMPARVA—SADRAS—COVELONG—MADRAS.

IN sailing from the southward you see the town of PONDICHERRY, at the foot of a black land, a little higher than the rest of the coast; this black land, about 3 leagues in length, on a flat hill to the N. W. of the town, is distinguished by a tuft of trees. The town is built along shore, affording a most delightful prospect from the sea; it is the chief of the French settlements in India, the residence of the governor general, and superior council, and before its fortifications and public buildings were destroyed by the English, during the 7 years war, Pondicherry was by much the largest, strongest, and most beautiful European settlement in the East-Indies. The French revolution having lately extended its desolating influence to this town, all political establishments are now there at an end, and anarchy rages with a violence which, though very far from the ferocious madness of the Parisian tigers, is yet sufficient to overturn and annihilate this ill-fated colony.—Its latitude is $11^{\circ} 55' 42''$ North, and its longitude East from London, by repeated observations, $79^{\circ} 56' 30''$. When on with the middle of Pondicherry, bearing W. $\frac{1}{2}$ N. $2\frac{1}{2}$ or 3 leagues, you have 15 fathoms, and bearing W. by N. 5 leagues, you have 38; there are no soundings without 40 or 42 fathoms, the bank there going off very suddenly.

Pondicherry, like all other places on this coast, has two roads. The *Little Road*, where ships anchor during the fair weather, that is to say, from the beginning of January to the beginning of October, and from the middle of May to the first of October; the

generality of navigators are of opinion that you may remain in this road until the 10th of the latter month, but experience has proved that it is advisable to leave it in the first days of October. You are lying in this road in 7 or 8 fathoms, to the East or S. E. of the town, at 1000 toises, or very little above a sea-mile, from shore. The *Great Road* is that where ships anchor during the bad weather; you lie there in 14 or 15 fathoms, and the general reckoning places it at $2\frac{1}{2}$ leagues at least from shore, whereas the trigonometrical operations of *M. Le Gentil* in 1769*, make the true distance only 3557 toises, or about $1\frac{1}{2}$ nautic league, which enormous difference ought to be attended to by navigators. The bottom in both roads is clear, and good holding ground. To the northward of this place, and close to the north bastion, is the entrance of a river capable of receiving pretty large country vessels over its bar, and which becomes very convenient for trade.

From Pondicherry to CONJIMEER the coast runs N. N. E. $\frac{1}{2}$ E. $4\frac{1}{2}$ leagues: between them are sand-downs along the coast, and behind these the black land before mentioned gradually decreasing, terminates about a mile to the southward of Conjimeer: this place is only remarkable by the ruins of a factory which the Dutch abandoned after 3 or 4 years residence; you find also the remains of an old English inclosure. The anchorage is very good opposite Conjimeer, in 6, 7, or 8 fathoms, about 2 miles off the coast.

From Conjimeer to ALLEMPARVA the course is N. E. by N. 5 leagues; about one league beyond Conjimeer you perceive a thick wood and a village; then the coast appears lower, and seems to bend in a little until you come near Allemparva, where the south side of the river rises in sand-downs, and projects out a little; otherwise the point is not dangerous, and in passing it the depth diminishes but one fathom; the north side of the river is covered with trees, and there are several hillocks on the land. The French had a settlement at Allemparva, which was destroyed by the English. You may coast it along from Pondicherry in 10, 12, or 14 fathoms, 4, 6, or 8 miles off the shore: in the offing you have 38, 40, or 44 fathoms, sand and gravel, 5 or 7 leagues from the coast, and without that no soundings.

From Allemparva to SADRAS, a Dutch settlement, the distance is 7 leagues N. E. by N. the country between them is partly flat, sandy, and but few trees until within 3 leagues of Sadras, where begins a thick wood of palm-trees extending about a league to the North; abreast of this wood, the water being shoaler than to the northward or southward of it, you ought to keep off a little farther thereabout in 11, or 12 fathoms. About 5 or 6 miles to the northward of the above wood, there is another equally thick, which, when you come from the South, seems to run out to sea, and form a point of land. From the southern part of this wood you may perceive the high flag-staff of Sadras,

* *Voyage dans les mers de l'Inde*. Vol. I. page 584. & seq.

which is seen at a great distance over the trees that hide the town: there are two pagodas, but not very discernible, one to the northward and the other to the southward.

From Allemparva you may see the high land of *Sadras*, a ridge of hills, some of which are very rugged, up in the country at the back of *Sadras*. You may sail along the coast in 10, 11, or 12 fathoms, at 5, 6, or 7 miles distance, and in the offing from 30 to 40 fathoms, coarse sand and gravel, 5 or 6 leagues off shore. Four miles to the southward of *Sadras*, you pass by the mouth of the *Palyam*, or *Paliar* River. The high land of *Sadras* bearing N. W. 4 or 5 leagues, you have 30 fathoms, but no soundings without 45 fathoms. When the south part of the high land of *Sadras* bears N. W. then *Sadras* is bearing West.

From *Sadras* to *Madras*, the coast lies N. by E. 11 or 12 leagues; the land near the sea is low and woody, but farther in the country it has several high mountains.

The coast from *Sadras* to *Covelong*, and to the northward of it, is steeper to, and has deeper water than off *Sadras*, or to the southward of that town. You may in this part coast it along in 20, 22, or 24 fathoms, at 4, 5, and 6 miles off shore; in the offing you will have from 30 to 40 fathoms, 4 or 5 leagues off the coast, and without this depth no ground.

About 7 miles to the northward of *Sadras* are the *Seven Pagodas of Moolivaram*, which are only to be seen near the shore; two of them stand, one very near the sea, and the other on a rock washed by the sea, which has almost destroyed it; the four others are in the valley near the foot of the southernmost high land, and one on the very pitch of it: the sight of the pagodas in this valley is often intercepted by the woods, especially when they bear about West.

From the *Seven Pagodas* to *COVELONG* the coast runs to the N. by E. a little easterly, about 3 leagues; you sail along between 18, 20, 22, or 24 fathoms, at 4 or 6 miles distance, and the bank of soundings extends 13 or 14 miles farther to 30 and 40 fathoms. In this passage there is a rocky shoal projecting about a mile into the sea, which bears E. S. E. from the hillock of *Tripaloor*, remarkable by being much nearer the shore than any of the others. *Covelong*, called also *Covolam*, has a Portuguese factory-house, on which they hoist their flag; this house being very white is easily known.

From *Covelong* to *St. THOMÉ*, or *St. Thomas*, another Portuguese town, the course is N. $\frac{1}{2}$ E. about $4\frac{1}{2}$ leagues. This town, called by some *Maliapoor*, lies close to the sea-side, and is nothing but a heap of ruins; there are some churches, especially a cathedral, the see of a bishop suffragan to *Goa*, and in whose diocese are all the Portuguese churches on the Coast of *Coromandel*. The soundings are between 14 and 20 fathoms at a distance from 3 to 6 miles off shore, and in the offing from 30 to 40, and 44 to 45 fathoms at 6 leagues distance, then no soundings.

Inland there are high mountains, the northernmost of which is known from the others round it, by being a rounder and flatter, with a church built on its top: this is called *St. Thomas's Mount*, 2 miles to the westward, and is easily seen in sailing along shore. From the

the town or church of St. Thomas, to Madras, the coast lies N. $\frac{1}{2}$ E. 4 miles; you range it along in 10, 11 or 12 fathoms water, 2 or 3 miles off shore: about half-way between there is a remarkable high black pagoda.

MADRAS, or FORT ST. GEORGE, in $13^{\circ} 12'$ latitude North, and $80^{\circ} 32'$ east longitude from London, is the principal British settlement on the Coast of Coromandel, and the seat of the superior governor and council. It is divided into the white and black town; the first is small but well built, and well fortified; the latter, considerably larger, lies to the northward of it, and is the abode of the Gentoo merchants, Moors, Armenians, Jews, &c. and some Europeans who cannot dwell in the white town; a little river, over which there are two bridges, empties itself to the southward of the town, forming an elbow in its course from the northward, whereby it surrounds most part of the fortifications, and adds greatly to the strength of that fortress. It is a place of great trade, though few or no ships belong to it. The country is beautiful, fertile, and affords the most agreeable prospect; here you have plenty of all sorts of provisions for a fleet of men of war, wood only is a scarce article.—The landing place is at the sea-gate; but the surf breaking very high, and being greater here than on any other part of the Coromandel coast, renders the landing very dangerous. They proceed in the following manner in order to land: the ship's boat anchors just within the surf, where what they call the bar-boats come and take out the passengers or goods, carry them through the surf, and bring them on shore.

The watering place is about $1\frac{1}{2}$ mile to the northward of the fort; but your ship must be watered by the country or bar-boats. The road is bad and entirely open; you lie there exposed to all winds that blow, with a large swell constantly running in upon the shore, which makes the ships labour very much; the best marks for anchoring are the flag-staff and the cupola of the town-clock in one N. W. by W. St. Thomas's Mount S. W. $\frac{1}{2}$ W. and the high black pagoda mentioned above W. S. W. You are then in 10 fathoms, $1\frac{1}{2}$ or 2 miles off shore, the bottom is muddy, and good holding ground; but farther to the northward it is reckoned foul, there being many wrecks, lost anchors, &c. and many ships have spoiled their cables in this part. There is generally a northern current in the S. W. Monsoon, and a southern one in the N. E. Monsoon, sometimes running very strong, and sometimes not perceivable.

PASSAGE FROM TRINCOMALEY TO MADRAS, OR ANY OTHER PART OF THE COAST OF COROMANDEL, IN THE N. E. MONSOON.

YOU must stretch off from Trincomaley to the eastward, a small distance, more or less, as the wind hangs to the northward or eastward; always taking the advantage of the wind veering to the eastward, to stand to the northward; and of its veering to the northward,

northward, to stand to the eastward. In the offing, the winds hang pretty much to the eastward; so that, having a degree or two easting from Trincomalee, you will be able to fetch any part of the coast you may be bound to. Several ships have made a passage from Trincomalee to Pondicherry in 9 or 10 days, and to Madras in 12 or 13, even in December, which is the height of the N. E. Monsoon, taking care to fall in to the northward of their port.

REMARKS MADE IN A PASSAGE FROM MADRAS TO TRINCOMALEE,

IN APRIL 1762, TO AVOID THE LITTLE MONSOON.

By Mr. NICHOLSON.

"SAILED from Madras the 9th of April, and had mostly little winds and fair weather, with smooth water; the winds chiefly from E. S. E. to S. S. W. and S. W. sometimes we had them in the N. E. quarter, and then the breezes were fresher and steadier than in any other.

"We had various kinds of currents, setting sometimes strong to the northward, at other times as strong to the southward, and for several days together we perceived no currents at all. Though the currents are thus variable out in the bay, where they change with every shift of wind of any strength or continuance, yet thus much may be depended on, that the nearer the coast, the stronger the current; as for instance, the first day we left Madras, the current set the ship 62 miles to the northward; the next day only 8 miles, and the third we found no current at all. The day before we made Ceylon, the ship's run and observation agreed exactly; we made Ceylon at 6 A. M. and at noon found the ship 35 miles to the northward of our reckoning; when we got in shore and anchored, we found the current sometimes running at the rate of 2 knots; all which together, sufficiently prove that the nearer the land, the stronger the current.

"All along the Coast of Coromandel, the variation, what little there is, is westerly; and this west variation continues for $1^{\circ} 30'$ or 2° of longitude from the coast. Then it changes to east variation; and you may depend upon it, that, if coming in with the Coromandel coast, you change your variation from East to West, you are not more than 30 or 40 leagues from the coast.

"It is well known, that in April, and from that month to the middle of May, the winds about the N. E. part of Ceylon are mostly from S. E. to South in the day-time, and south-westerly at night. These southerly winds occasion a very strong northerly current at this time of the year; therefore I would recommend to all ships bound to Trincomalee,

Trincomalee, at this season, to make the land in the latitude of 8° North, which is $\frac{1}{2}$ a degree to the southward of Trincomalee, and thereby save much time and trouble, as we experienced by falling in to the northward (though against reason, experience, and my remonstrances), where we met with southerly winds and northerly currents, and were forced to work up in shore, anchoring, &c. whereby we lost 7 days. Let this serve as a caution to those who come this way hereafter; and remember that it is better to fall in 20 leagues to the southward than 2 leagues to the northward."

PASSAGE FROM THE COAST OF COROMANDEL TO THE COAST OF MALABAR.

THOSE who sail from the Coast of Coromandel, Bengal, or any place more easterly, from the beginning of October, should, in order to render their passage safer and shorter, make the island of Ceylon to the northward of the Bassas; then keep along the south coast as far as Colombo, from whence they are to cross to Cape Comorin, and make the best of their port, conforming to what has been already said page 242.

If in the months of October and November, they find to the southward of Ceylon, the winds blowing from the West to N. N. W. they must turn to windward, making advantage of the currents, which frequently set to the westward very strong, and this advantage will be the greater by keeping near the shore.

INSTRUCTIONS FOR MAKING THE OUTER PASSAGE FROM MADRAS TO BOMBAY, IN THE S. W. MONSOON.

By M. NICHOLSON.

YOU are to work up along the Coromandel coast from Madras, as far as Negapatam, by taking the advantage of the sea and land-winds, and to anchor when the wind and currents are against you. The passage between these two ports may be made in 10, 12 or 14 days at most, in any month of the year, but May, or the latter end of April, at which time the current runs very strong to the northward. In June, July, or August, ships generally go from Madras to Negapatam in 9, 10 or 11 days.

When you have got to Negapatam, the worst part of the passage is over, or it may be said to be made sure, for there you meet with strong land-winds, that will run you over to Ceylon in 48 hours; and the strong westerly winds, which you will find all along the north-east part of Ceylon, will carry you to the southward very quickly. You must
coast

coast it along Ceylon as far as the Friar's Hood, which may be done, with the westerly winds, from Trincomalee, in two days.

From the Friar's Hood you ought to stretch off, and take your departure. Ships having brisk gales at S. W. and W. S. W. have crossed the Line the third day. Longitude made from the Friar's Hood $5^{\circ} 26'$ east, variation $37'$ West.

In lat. 2° or $2^{\circ} 30'$ South, you meet with the S. E. trade-winds; you ought to run to the southward, into $9^{\circ} 30'$ or 10° South, where these winds blow fresh; and there you must run down your westing; about 14° or 15° from the Friar's Hood will be sufficient.

Being in that latitude of $9^{\circ} 30'$ or 10° South, take care to steer so as that, by the time you have made $9^{\circ} 30'$ or 10° of west longitude from the Friar's Hood, you should have reduced your latitude to 3° or $3^{\circ} 30'$ South. From hence steer to the westward till you have made $4^{\circ} 30'$ of longitude more, by the time you are in the latitude of 2° South. This track leads between the Bassas de Chagas and Diego Ruyz Islands, described page 134 and 139.

Being in latitude 2° South, and longitude made from the Friar's Hood, about $14^{\circ} 30'$ West, then cross the Line, and steer to the northward: hereabouts the west variation begins to increase. Before you cross the Line you will meet the S. W. Monsoon; and, as soon as you get into the north latitude, you will have fresh gales with hazy dirty weather, and the more so as you proceed to the northward.

Having crossed the Line in the above-mentioned longitude, of $14^{\circ} 30'$ West from the Friar's Hood, you will steer to the northward with this westing, and take care to keep it. The Coast of Malabar lying N. N. W. and S. S. E. a north course will carry you in upon the shore, whilst a N. N. W. course carries you parallel to it. Several ships have fallen in with the coast sooner than they intended, for the want of this consideration, and by steering North.

In sailing this track, the variation increases to about 3° or $3^{\circ} 30'$, which, if properly attended to, will correct your longitude. In latitude from 8° to 10° North, and 7° to the westward of the Lackdivas you will have $4^{\circ} 12'$ west variation; and then $3^{\circ} 30'$ when you are in the above latitudes, $5^{\circ} 30'$ westward of these islands. Also if the variation be $2^{\circ} 27'$ or $2^{\circ} 30'$ West, you will be $3^{\circ} 30'$ to the West of the Lackdivas; in the above latitude the variation being $1^{\circ} 27'$, or $1^{\circ} 30'$ West, you will be 2° to the westward of these islands; and in sight of them, the variation is only $1^{\circ} 8'$ West. If you make westing, you will increase your variation: if easting, you will decrease it. In latitude from 11° to 12° North, you will have variation $3^{\circ} 5'$ West; $8^{\circ} 26'$ to the westward of Goa. In latitude from 12° to 14° North, 3° variation, and $3^{\circ} 5'$ West, 7° to the westward of Goa. In latitude $14^{\circ} 30'$ North, you will have variation $2^{\circ} 12'$ West, longitude $3^{\circ} 30'$ to the westward of the same city. In latitude 15° and $15^{\circ} 30'$ North, you will have variation

variation $1^{\circ} 28'$ or $30'$, 2° to the westward of Goa. Off Goa, in sight of the land, in latitude $15^{\circ} 30'$, you will have $42'$ variation West.

A ship keeping in $2^{\circ} 30'$ west variation, will go far enough to the westward, and also keep clear of every thing in going this outer passage; keeping in 3° west variation will carry her along to the northward, parallel to the coast, which is as safe and unerring a guide, as the Sun at noon for finding the latitude.

You are to proceed to the northward till you get into $18^{\circ} 50'$, which is the proper latitude to steer to the eastward for Bombay; but you must make an allowance for a southerly current, which in the S. W. Monsoon, you generally find setting along the coast, from 15 to 20 and 24 miles in 24 hours. Steer to the eastward in the parallel of $18^{\circ} 50'$ till you have soundings, which you will find 30 leagues off the coast, at 80 or 90 fathoms, and shoaling gradually.

DESCRIPTION OF THE COAST OF COROMANDEL, FROM MADRAS TO THE NORTHWARD.

PULLYCATE AND SHOAL—ARIMEGON—CALIATOUR, &c.

FROM Madras to the *Reef of Trifoo* or *Natoo* the course is N. N. E. 3 leagues. You may know when you are near it by a small cluster of trees of equal height, and whose flat top resembles a table: when this wood and two palm or cocoa-trees are in one, you are athwart the reef, which projects a good league into the sea; having opened the two trees, with the little wood a sail's breadth, you must steer N. E. to keep clear of the shoal that lies off Pullycate, the southernmost part of which bears N. E. by E. 2 miles from the pitch of the reef.

From Madras to PULLYCATE the coast lies N. by E. about 7 leagues: you have from 14 to 18 fathoms water, 3 or 4 miles off shore; and from 30 to 35 fathoms, sandy ground, at 3 or 4 leagues. The land near the sea is low and woody, though in some places, the trees, being pretty high, make it appear at a distance like hillocks, or very broken land. In the country lofty mountains, called *the High land of Pullycate*, are seen a great way off in clear weather.

PULLYCATE SHOAL extends N. E. by N. and S. W. by S. its north end lies S. E. by S. from the river; ships that sail 3 leagues distance from the coast need not fear it.

"To enter PULLYCATE ROAD coming from the southward," says Captain *George Baker*, 1759, "do not come under 13 fathoms till the flag-staff bears West, when you may stand in West, a point or two northerly, to bring it W. $\frac{1}{2}$ S. or in one with the *Kettle-*

N n

bottom

bottom (a remarkable hill up the country); in this track there are at least $5\frac{1}{2}$ fathoms, till you get within about 2 miles of the flag-staff, in the above direction, when you will have 7 or 8 fathoms, ooze."

From Pullicate to ARIMEGON or *Armegon*, called also *Duraspattam*, the coast runs North and N. N. W. 13 leagues; about half-way, 3 leagues off shore, lies a small bank, with $2\frac{1}{2}$ fathoms upon it. Mr. *Dalrymple* in 1763, named it the *London's Bank*. Five leagues N. by W. from this is another, called by some Arimegon Shoal, at the same distance off shore. When bound to Arimegon you may go between these two shoals, but you must be acquainted herein, or else it is better not to venture; you find between the coast and the banks a large and fine channel which extends N. by E. and S. by W.

According to M. *D'Après*, to sail with a fair wind from Pullicate without the banks, you keep off the coast steering N. N. E. along the banks, and not coming under 8 or 9 fathoms water; if you get into 12 you must edge in again to 9 fathoms. This is absolutely necessary for those who go to Masulipattam, because in June, July, and August, the currents set N. E. and even sometimes more easterly; so that if you keep too far off, you would run the risk of losing your passage, as it has happened to several ships that have not been able to fetch nearer than Narlapour, and thence turn it, but with great trouble, to reach Masulipattam.

Abreast of the London's Bank the trenching of the coast is toward the N. N. W. to Arimegon, distance 6 leagues. Within land may be seen Arimegon Hill; when it bears West you perceive, a little to the southward, near the shore, the ruins of an old English factory, and to the S. S. W. the mountains of Pullicate.

Captain *Baker* recommends, in coming from the southward to Arimegon, to keep in 12 or 13 fathoms till the Kettle-bottom, if visible, bears about S. W. $\frac{1}{4}$ W. then Arimegon Hill (which stands by itself, and detached from any other, almost due West from the town) will be about W. N. W.; having a sight of this you continue your course till it bears W. $\frac{1}{4}$ S. or in one with the north grove, which may now be seen from the poop, then the Kettle-bottom will bear S. W. Thence standing on in the same course, you will have no less than 6 fathoms, till within about 2 miles off shore, where you may anchor in 5 or 6 fathoms, and have an easy communication with the river.

From Arimegon to CALIATOUR or *Kistnapattam*, the coast runs North, somewhat easterly, 5 leagues: in this interval part of the Arimegon Shoal is generally laid down, and the course to avoid it is N. N. W. in 10, 11, or 12 fathoms. Four leagues farther North you come to PENNAR POINT, at the mouth of a large river of the same name. You must sail in 16 or 17 fathoms, and come no nearer, on account of a bank stretching there 4 miles out, and which being very shoal is consequently the more dangerous. Captain *La Touche* being at anchor off it in 25 fathoms, prepared in the

the night-time, with a fair wind, to make a trip N. W. and regain the depth of 13 or 14 fathoms; though the wind was moderate, and he had got but a little way, in less than a quarter of an hour he fell from 15 to 5 fathoms; this obliged him to haul off immediately; however on heaving the lead, and finding the next cast 15 fathoms, he imagined he might be deceived in the sounding; but he has since learned that this bank really shoals from 15 to 5 fathoms, as he had found it.

From Pennar Point to DIVELAN they reckon 3 leagues North, and from the latter place to ZARERA about 6 leagues N. by W. you may coast it in 8, 9, or 10 fathoms. To the northward of Zarera are two very thick woods; and in the town a white pagoda. Within land are some high mountains which shew themselves 10 or 12 leagues at sea in clear weather.

From Zarera to the mouth of GONDEGAMMA RIVER, the coast trenches N. E. by N. $\frac{1}{2}$ N. about 9 leagues. Along this coast runs a bank extending a little into the sea, and without it another; but small vessels may pass within it; neither of them is dangerous for large ships that keep in 9, 10, or 11 fathoms: in approaching the river you perceive the village, with a pagoda on the sea side.

The mouth of the Gondegamma is the northernmost boundary of the Coast of Coromandel, beyond which the Coast of Golconda begins.

THE COAST OF GOLCONDA,

MASULIPATAM—POINT GORDEWARE—CORINGA BAY, &c.

MOOTAPILLY, the first place of note on this coast, lies about 3 leagues or more N. E. of the Gondegamma river. You may coast it at a league distance in 9 or 10 fathoms, ooze. East of Mootapilly is a grove of palm-trees, and a little farther another less, and seemingly higher than the first, consisting only of 20 or 30 trees. When you sail along the coast, in the depth above mentioned, you go within the bank of sand, which lies 5 leagues S. E. by E. from Mootapilly; it is 7 or 8 leagues long N. E. by E. and S. W. by S. on the south-west part of it, which is the shoalest, there is no less than 3 fathoms. The approaches of this bank are known by a sandy bottom; instead of which, in the channel between it and the land, the bottom is ooze.

In sailing from athwart Divelan, Zarera hill bearing N. W. by N. to go clear of this bank you must steer N. E. and be careful to keep in 10 or 12 fathoms, stiff ground, then you have nothing to fear; but if the depth increases, and the bottom becomes softer,

edge in, and shape a course to the eastward of Pettapilly, in order to get into 9 or 10 fathoms, oozy ground.

PETTAPILLY lies 7 leagues to the N. E. of Mootapilly; about 2 miles westward of the town runs a little river, and opposite the town a grove of palm-trees remarkable for its being flat and even, for which reason it is called the *Table of Pettapilly*.

From Pettapilly to Chipelar river, the southernmost and principal mouth of the Kistna river, is about 8 leagues nearly East, the coast in that interval forming a pretty deep bight towards the N. E. About 3 or 4 leagues East of Pettapilly begin the openings of some of the branches of the Kistna, which running along the low land form islands of it, but they are not perceptible to those who sail along shore: these branches ebb and flow, and a navigator has observed the water here to rise and fall 4 feet, being at anchor in 5 fathoms, ooze.

From the southernmost opening of the Kistna to POINT DIVY, the course is N. E. by E. distance 6 or 7 leagues. The coast to the northward of Point Divy is low land, level and without trees. Along it the mouths of two rivers may be perceived, and near Masulipatam a tuft of palm-trees about a league to the S. W.; these trees in coming from the S. E. seem to form only one great tree, but they are seen separate when you approach. Captain *George Williams* observes that, "when Point Divy bears N. N. W. about 3 leagues distant, you see 4 palm-trees distinct in a row on the beach, behind which is a sand-hill; the real point is full of trees, and along the sandy beach to the northward not a tree is to be seen."

Point Divy bank extends to the S. E. of the point, therefore the ships coming from the westward that coast it along in 7 fathoms, are obliged to steer S. E. to keep in the same depth on the edge of the bank. When you have passed it, and Divy Point is bearing N. W. by W. you may then go round in 7 fathoms to fetch the road of Masulipatam, whose flag-staff is descried before you can see the coast.

MASULIPATAM lies about 3 leagues to the north-westward of Point Divy: it is situated at the entrance of a small branch of the Kistna; and another branch of the same river runs on the north side.

From Masulipatam to NARSAPOUR, or *Narsipore*, the course is E. by N. $\frac{1}{4}$ N. distance from the town $13\frac{1}{2}$ leagues, and from the road 12 leagues. The coast between the two is encompassed with a bank that extends half a league in the sea, and opposite Narsapour river there is another bank about one league from shore; there are on the bar of this river 8 or 9 feet water. Within the bar of the Kistna, or Narsapour river, you have from 4 to 3 and 2 fathoms water, and then up the river to Narsapour from 4 to 6, 7, and 5 fathoms; but no dependence can be had on the sands at the bar, as they are constantly shifting.

Several Charts place a shoal 3 leagues South of Narsapour, which some describe as rocky, and others as soft ground; but the existence of such a danger is denied by the

major part of the navigators, who in this track must have run over it; in case it should really exist you may prevent the dangerous effects of it, by keeping your lead going, which caution in these parts ought to be constantly observed.

If you are bound to MASULIPATAM in the westerly Monsoon, it is necessary to keep soundings on the coast, whether sailing within or without the shoals of Armegon and Mootapilly. This holds good from the month of May to that of October; but in February, March, and April, as the winds generally blow between East and South, you must steer for Narfapour, and even more to windward, if possible, in order to give Pettapilly bight a good birth, from whence you could not get out, without great difficulty, and the help of westerly winds, for which you should be obliged to wait.

We must observe that when you sail within the shoal of Mootapilly, after you have coasted along as far as Pettapilly in 9 fathoms, you must steer S. E. and even S. E. by E. to double Chipelar river, or the mouth of the Kistna, abreast of which you will find 7 fathoms, 2 leagues off shore.

In the month of May you can shape a course between Masulipatam and Narfapour, because the winds vary then from S. S. E. to S. W. and sometimes as far as W. S. W.

In October, November, and December, there is but little navigating here, as well as all along this coast. In the months of December and January, if you are at the bottom of the Coast of Coromandel, you cannot return, because the N. E. winds and currents, which run to the southward, are then in their greatest force.

To go to Masulipatam when you are off Divy Point, you must keep in 8 or 9 fathoms to avoid the bank of Divy. When Divy Point bears West, you must round it in 7 or 8 fathoms, and steer N. N. W. borrowing more or less from the westward, according as you find yourself nearer or farther from the shoal; then edge away by little and little, in 5 fathoms, ooze, always avoiding the hard ground. When the depth exceeds 6 fathoms, you must borrow more from the West, and steer thus as far as the road of Masulipatam, before which you anchor in 4 or 5 fathoms, ooze, at $1\frac{1}{2}$ league off shore.

We have described here above the tuft of palm-trees by which Masulipatam may be known; but without this mark it is easily distinguished by the houses and flag-staffs of the Europeans. To the northward of the town you will perceive also a wood cut even, and whose trees are of an equal height. The whole bottom in Masulipatam Bay is ooze, except near shore; and the depth does not decrease above $\frac{1}{2}$ a fathom for a quarter of a league.

From Narfapour Road to Point Gordeware or Guadavery, the course is E. N. E. 14 or 15 leagues. About 8 leagues East of Narfapour you see two white pagodas, which you should take care not to confound with those that are to the West of Point Gordeware, and to the eastward of which pagodas is Visheron River: several navigators have been mistaken herein for want of observing that these last are 3 in number.

“ POINT

"POINT GORDEWARE," says Captain *Lesley*, "has on it three remarkable trees, and not one near them, or to be seen at all. Two or 3 leagues to the westward of the point, which is low, and off the pitch of the point, steep, come not nearer than 16 fathoms in a large ship. On your approach to the southward of the point, you will not have soundings till within 4 leagues, and they shoalen 10 fathoms at a cast: you will be in 16 fathoms from 50 in 3 or 4 miles run, so in standing on in the night, with fresh wind, it is time to tack so soon as you strike soundings. To the northward of the point the soundings are more regular.

"There seems to be," continues this gentleman, "one thing wanting on this coast, which a very small expence would do; and it would be productive of great advantages to the trade of this country; which is to build on all the shoal points such as *Divy*, *Gordeware*, *False Point*, and *Point Palmiras*, obelisks, or other land-marks, on the pitch of each point: for all these points are so low that it is with difficulty they ever can be distinguished, as no ship chooses to go near enough them, particularly sailing along the coast. Now what infinite advantages would not accrue from being able to know at a great distance where the point really is? an obelisk or land-mark 30 feet high, would be seen on such flat low land 6 or 7 leagues off; the expence would be so very trifling, as not worth mentioning in comparison to the end attained.

POINT GORDEWARE, according to the trigonometrical survey of Mr. *Michael Topping*, 1789, lies in $16^{\circ} 48'$ lat. North, long. $82^{\circ} 17'$ East. It is a low and very narrow hard sandy beach, 4 or 5 miles long, in a North and South direction, over the north part of which the sea breaks heavily: there are also banks of breakers about 3 miles in length, at its north end, over which the sea breaks very white. Within this point about 6 miles W. by N. is the opening of one of the branches of the Guadavery river, on which stand the town and English factory of Coringa. A bank which begins at $2\frac{1}{2}$ miles from the pitch of the point, extends above 4 miles N. N. W. and then about West to the opposite shore; it is soft mud towards the sea, with a depth of $3\frac{1}{2}$, 3, $2\frac{1}{2}$ and 2 fathoms; but within the point, to the distance of $1\frac{1}{2}$ mile from Coringa river, it is hard ground, very shallow, and in most places dry.

CORINGA BAY is between Point Gordeware and Jaggernautporam *, whose river's mouth lies about 10 miles N. W. by N. from the point. The ground within the bay is

* This town is also called Jaggernaicporam, Jagrenatpour, Jagnapour, and Cocknara. Captain *George Williams*, who calls it Jeknaporam, speaks thus of it. "It is in a deep bay much easier seen to the northward of Coringa, and in sight of each other. Jeknaporam is known by a white fort and flag-staff of the Dutch settlement: you anchor in $5\frac{1}{2}$ fathoms, the flag-staff bearing N. W. distance off shore nearly 2 miles; you may land in the ship's boat keeping the fort open with the mouth of the river which you enter, and which goes a long way above the town. Ships, &c. are well built here, and I think cheap. I saw a snow 65 feet keel, 24 feet beam, carry 9000 B. mauds computed at 4000 star rupees. Wood, water, and stock are obtained easily, and stock is cheap, 10 fine fowls for a rupee, &c. &c.

almost

almost every where a soft mud. The usual anchoring place for country vessels is to bring Jaggernautporam, which is easily known by the white buildings, to bear N. N. W. in 3 fathoms; the bar off Coringa will then bear about S. W. by S. and Hope Island, which is a low sandy bank, and can only be seen in clear weather, S. S. E. $\frac{1}{4}$ E. distant off the nearest shore less than 2 miles.

It is high water in the bay, at full and change days, about 9 h. $\frac{1}{4}$ * or 10 o'clock, but a strong easterly wind will sometimes make high water near an hour sooner, and will keep it up considerably; when this circumstance happens, the flood will make very strong before its usual time.—The springs ebb from 5 to $5\frac{1}{2}$ feet, and the neaps ebb from $2\frac{1}{2}$ to 3; the high water of these being about 2 feet less.

On the bar there is from 13 to 14 feet water, according to the height of the springs, sandy bottom, and the water quite smooth, as well as in the roads: without the bar the bottom is soft mud, and it is not uncommon to see vessels aground in it during the greatest part of the flood and ebb.

When over the bar the leading mark up the river is a small tope of little trees a-head W. by S. $\frac{1}{4}$ S. (about 120 yards from the starboard shore) till you open the river on the starboard side; then steer for a village and Palmira tope on a point S. W. till you are nearly shutting in the sea shore to the south-eastward; then stand away for the west end.

* This is according to Mr. William Stephens, Sub. Dir. Engin. Captain Lesley says it flows there full and change 8 h. 15 m. S. E. by E. and N. W. by W. 6 feet up and down. Mr. Topping, differing from both these gentlemen, says it is high water at Coringa, at the full and change, about 9 o'clock; but that the highest tides are generally the 3d or 4th after the syzgies, when the total rise of the sea is from 4 to 6 feet: he then gives the following

TIDE TABLE FOR CORINGA.

Moon's Age.	Days.	High Water.	
		Hours.	Minutes.
0 —	15	8	30
1 —	16	9	0
2 —	17	9	45
3 —	18	10	30
4 —	19	11	0
5 —	20	11	45
6 —	21	12	45
7 —	22	1	45
8 —	23	2	50
9 —	24	3	50
10 —	25	4	50
11 —	26	5	45
12 —	27	6	45
13 —	28	7	30
14 —	29	8	0

of the fishing stakes: there is not less in this track than from $3\frac{1}{2}$ to 4 fathoms.—Up the river is the town of Ingeram, where the Company has a chief. The French factory of Yannaon, or Yannam, was on the larger branch of the Guadavery to the southward of Coringa.

All this detail cannot be better concluded than by the interesting description of Captain *Lesley*. “As I have been,” says this officer, “under the necessity to put in CORINGA BAY to refit his Majesty’s ship the *Orford*, and stop several leaks, the observations I have made of what use this place may be of, will be found, I hope, of some utility to my country.

“Coringa Bay and river are capable of being of infinite service to the King’s, Company’s, and country ships, being the only place on the west coast of the Bay of Bengal, where a vessel above 200 tons can be refitted, or stop her leaks during the S. W. Monsoon. It is always, during that Monsoon, so smooth in this bay, that a ship may venture to take a large keel for the above purpose; and, if occasion required, could heave down. There are always a great number of caulkers and carpenters employed here, all the year round, repairing and building country vessels. The *Orford*, in two days after her arrival, had between 30 and 40 caulkers set to work on her, and was on the keel to stop her leaks, and shift some planks, for 6 or 7 days. In case of necessity several hundred caulkers and carpenters could be procured along the coast: there is also timber and several stores to be got. Wood and water are obtained with convenience and facility; and fresh provisions of all kinds, was it an established port, would be procured in great quantity. There are besides a great number of decked country-boats call Doney’s, which would be of infinite service to a squadron putting there to refit. To all these advantages, add the vicinity of Coringa Bay to *Pegu* river, for the supply of large teak timber of all sorts, and other naval stores (not being above 10 days sail from it) in either Monsoon; also the port of *El Rio*, in the straits of Malacca, where poon masts and spars are brought from, besides oil, dammar, and pitch, with several other useful articles which they obtain there for the dock yard at Bombay.

“I find but one shoal in the bay, and the least water on that is $19\frac{1}{2}$ feet, so that the largest ships have only to fear this; it is a small spot, and a buoy laid down on it would prevent all danger.”

The Coast of Golconda extends as far as *Selliavaram*, a small town 12 or 13 leagues to the N. E. of Jaggernautporam; this part is clear of all danger, and you may range it along in 6, 7, or 9 fathoms, 3 or 4 miles off shore; then you come to the Coast of Orissa.

THE COAST OF ORISSA.

VIZAGAPATAM—BIMILIPATAM—CHICKACOLE—GANJAM—FALSE POINT, AND POINT PALMIRAS.

ELEVEN miles to the N. E. of Selliavaram, and about 16 leagues N. N. E. from Point Gordewar lies WATTARY, or Wataree, where the mountains of Orissa begin: Wataree is known by a mosque built on the top of a hill. When you make this coast coming round Point Gordewar, the first distinguishable land you descry is a remarkable mountain at a great distance, which has something of the appearance of a shoulder of mutton; and also a peaked hill, which, however, you cannot see so plain but when you approach nearer.

About $4\frac{1}{2}$ leagues from Wattary lies *Panary*, or *Pondimarca*, which is known by a small hummock on the strand, to the westward of which is a small bay and a creek for boats: the latter is 2 miles farther, with some big rocks above water; about mulket shot from shore, you keep 2 miles offing in 10 or 11 fathoms.

VIZAGAPATAM, a considerable English settlement, is about 10 leagues to the N. E. of Wattary. *Pigeon Island*, which lies 6 or 7 leagues from Wattary, is the only one on the coast; it is close inshore, and cannot be distinguished as an island at any distance, but appears like a small round hummock; the coast a-breast of the island is a high sand bank, whose easternmost part is full of trees.

Vizagapatam is distinguished by the hill called the *Dolphin's Nose*, which is on the westernmost point of the road, but it is better known by a high mountain plainly seen 7 or 8 leagues inland; whereas the Dolphin's nose at a distance is eclipsed by the highland at the back of it, besides it having a great number of hills of various heights and sizes to its southward.

When Pigeon Island bears North, distance 6 or 7 miles, the Dolphin's nose may be plainly perceived; a large mosque stands upon it, but is not easily seen till pretty near, because it is on the easternmost declivity of the hill. To anchor there the two high cocoa-trees, which grow before the fort, must be brought in one; then the river's mouth will be open to you, and in 12 fathoms you have good ground for a large ship; but you must bend your best bower cable to an anchor of about 16 cwt. otherwise it will be impossible to weigh it. Another mark is to bring the Mosque N. W. or N. W. $\frac{1}{4}$ W. and anchor in $9\frac{1}{2}$ fathoms.

Mr. *John Seaton's* directions being more accurate and more circumstantial, must be added to these, as follows.

" For coming to anchor, at Vizagapatam, in small vessels, bring Martin's Point and Tornary's battery in one; the outermost stones below the Dolphin's nose S. S. W. the Little battery by the bar W. N. W. here you have 6 fathoms, sand, and are close under the north side of the Nose, which is steep to. In large vessels bring Martin's Point flag-staff and the guard-room by Tornary's battery in one; the Green Hill to the southward of the Nose S. W. the Sugar-loaf and Walltear house in one; the Bar-battery N. W. by W. here you have 8 fathoms, sand and mud. *N. B.* They who bring to farther off shore are in danger of losing their anchors in a very stiff ground.

" For coming to anchor in the N. E. Monsoon bring the Fort flag-staff, and center of the middle battery in one; the two lower Muskeats in one; Walltear house and the west side of the Sugar-loaf, in one, you have 8 fathoms, sand.—When the north-east end of fort-house, and the north end of the centry box on the middle battery are in one, you have the river's mouth open: Walltear house and the west side of the Sugar-loaf in one, the top of Green Hill just open with the Nose, here is 8 fathoms, sand and mud, distance off shore a good $1\frac{1}{2}$ mile, and the best road for any vessel.

" When the guard room by Tornary's battery, and the centry box on Benyon's battery are in one, Walltear house and the Sugar-loaf, as also the Nose and the Green Hill in the same bearings as before, you have 8 fathoms, sand and mud, the river's mouth full open: this is the most northerly birth vessels ought to come to."

From Vizagapatam the coast runs N. E. about 5 leagues to BIMILIPATAM, a Dutch fort and factory taken by the English in 1781, and restored by the last peace: it is known by a long mountain, which runs inland from the sea side: you perceive also upon the shore a little hill to the westward of Bimilipatam, like a Sugar-loaf; when you have passed it the Dutch factory is seen on the west side of the river. You may anchor there in 6, 7 or 8 fathoms, soft ground, the factory bearing W. by S. to lie on the other side of the river it must bear S. W.

From Bimilipatam to Conara or Conara River, the course is N. E. by N. about $3\frac{1}{2}$ leagues; half a league farther to the N. E. is *Conara Point*. To the eastward of Conara you see a thicket of palm-trees, S. E. by E. 2 leagues from which are the Rocks of CONARA or *Santipilly*. When you coast along from Bimilipatam the best channel between the main and these rocks is to keep in 7 or 8 fathoms, but at farthest no more to seaward than 9 or 10, nor nearer the shore than 5 or 6 fathoms. If you sail without this danger, you should not come nearer than 16 or 17 fathoms; and in this case the surest way will be to keep in 20 fathoms, which will carry you 2 leagues wide of the rocks, near which the current sets strongly on them.

From Conara Point to Maufaze-bunder, at the entrance of CHICACOLE river, the coast extends $11\frac{1}{2}$ leagues to N. E. by N. and then to N. E., the land between forming some-
thing

thing of a bight. Near Chicacole river are 3 or 4 great trees, and some palm-trees; the town lies $1\frac{1}{2}$ league up; in sailing along you may keep 4 miles offing in 13 fathoms, sandy ground.

From Chicacole to CALINGAPATAM, the bearing is N. E. $\frac{1}{2}$ N. distance 15 miles; this place is known by 3 or 4 great trees to the northward; and you have 13 or 14 fathoms a league from the shore. About 10 miles farther, with the above bearing, you come to Caletar or ALATAR; you see between the two places 2 thickets, each consisting of about 10 or 12 palm-trees. The depth is the same as above mentioned, at an equal distance from the coast.

From Alatar to POONDY the coast runs toward the N. E. $5\frac{1}{2}$ leagues, the depths are 12, 15, and 17 fathoms, at $1\frac{1}{2}$ league from the shore, sand mixed with large gravel: close to the shore, abreast of Poondy river, are 10 or 12 rocks, and within land some high indented mountains, which along the coast become of a middling height, but equally indented.

From Poondy to BARWA or *Barva*, the bearing is N. E. $\frac{1}{2}$ E. and the distance about 5 leagues. To sail from one to the other, keep about 4 miles offing, in 15 or 16 fathoms, sandy ground. Barwa hill is high, and round it are some hillocks, the most remarkable of which is to the southward of the river: to the northward of the hill are several others like it, but somewhat higher.

From Barwa to GANJAM *, the distance is about 12 leagues, the coast running N. E. Between the two is the pagoda of Mansurcotta, which stands by itself, upon a moderate low land, woody and even. To the N. E. of this pagoda appears Carapar hill; though it is not one of the highest on the coast, yet when it bears N. N. E. it may be known by its shape, which represents a long tomb, a little steep on the side next the shore, towards which it declines; whereas the more inland hills run off as the coast. This different direction makes Carapar hill form an angle with the others, towards the N. W. between which to the southward a plain extends as far as 5 hills, whose tops make 5 saddles: they are seen as you approach Ganjam, whose river is broad and frequented by many of the country vessels. To the southward of this river is a fort, and a thicket of palm-trees that seem to be of the extent of a cannon shot; coming nearer you discover another even at the top like the table of Pettapilly. In all this part you must keep an offing of $2\frac{1}{2}$ leagues in 20 or 25 fathoms; nearer, the soundings shoal very fast.

From Ganjam to MANNICKPATAM the coast runs N. E. 9 leagues. It makes a kind of bight between them, in which there is no good anchoring ground, but about 3 leagues

* All this detail between Barwa and Ganjam is not so clear as the rest. Mr. *D'Après*, from whom it is taken, gives the name of Sommavéron to Ganjam, and places Carapar $6\frac{1}{2}$ leagues farther to the N. E. which brings the pagoda of Mansurcotta to the North of Ganjam, instead of the South of that place, where it is actually situated.

to the southward of Mannickpatam; indeed it ought to be avoided, especially with a S. E. wind.

From Ganjam the mountains, stretching no farther northward, leave between them and the shore a plain of reddish soil, especially near the sea side, and then begins the great Chilka lake, extending along the coast about 10 leagues. Off Mannickpatam a bank of sand projects 2 miles, and shoals from 10 fathoms suddenly to 4, so that you must come no nearer than 12 fathoms. The soundings are sandy, a league from the shore, and muddy at 2 leagues. Mannickpatam, which stands on one of the openings of the Chilka lake, may be seen when Carapar hill bears W. S. W. 7 or 8 leagues; it is known by a little pagoda encompassed with houses and other buildings, with some large trees.

From Mannickpatam to JAGGERNAUT PAGODA the course is E. N. E. $\frac{1}{2}$ E. 5 or 6 leagues: there is no danger along this coast, therefore you may keep at what distance you think proper, the depth being the same as above mentioned, and the land of the same colour. Jaggernaut is one of the most celebrated pagodas in India; here is a large town, about two leagues from the sea side, which is seen far off by the height of its buildings. As soon as you are off Mannickpatam, you may perceive the pagoda from the mast-head; at this distance it appears like a large ship under sail; on approaching it it looks like three pagodas very near each other, the south-west one exceeding high and round, with a spike and a large ball at the top; the second, which almost joins to the first, appears less round at the top, it has also a spike and a ball, as has likewise the third, which is the least, and round like the first. These three pagodas, which seem joined together, form a high and broad building.

Four leagues and a half E. N. E. of Jaggernaut Pagoda is the BLACK PAGODA, which at a distance resembles (like the former) a large ship under sail; but on a nearer view it loses its appearance, and becomes less in width. When you bring it to bear N. N. E. it looks like two buildings joined at the bottom, and separate aloft, which finish in a peak. About a league W. by S. there is another little pagoda, standing like this on an even, reddish ground without trees. This circumstance is sufficient to distinguish the Black Pagoda from that of Jaggernaut: besides, about a league W. S. W. of the little pagoda, you discover between the two former a rising ground, with some trees thinly planted: and though there is another nearly like this, a league beyond Mannickpatam, you cannot mistake them if you observe the distance of the one from the Black Pagoda, and its different appearance from that of Jaggernaut.

From the Black Pagoda to False Point they reckon about 18 leagues, the first 5 leagues E. by N., the next 3 E. N. E., and the 10 last N. E. The coast between these two places is bordered with a bank that stretches $\frac{1}{2}$ a league into the sea, and in some places a little less. Off False Point it extends $1\frac{1}{2}$ league. The first 4 leagues the land is pretty even, and without any thing remarkable; the 4 following leagues it appears in downs and hillocks, and at the end of these 4 last leagues runs the little river Marfepour,

near

near which is seen a small thicket. Three leagues to the northward there is another small river; the coast concaves a little between the two, being very low, as it is for 3 leagues more northerly; afterwards it shews itself higher by reason of a thick and even wood, which makes it appear more elevated than any you have seen from Man-nickpatam.

On approaching FALSE POINT you would take it, although it is the main-land, for a little island, on account of the want of wood, and of the entrance of a river, which makes a discontinuation appear: the part, which is perceived separated, is False Point. From this place the coast, whose direction was N. E. extends to the northward, and more westerly, forming a great bight. Many navigators, deceived by this appearance, have taken False Point for POINT PALMIRAS, and the mistake has occasioned the loss of several ships. The knowledge of the depth alone is not sufficient to prevent this error, because upon the east edge of False Point bank, you find for 2 or 3 casts the same as at Point Palmiras, and the bottom of a muddy sand, gravel and small flat specks, black and without shape, like bruised pepper; but with this difference, that at False Point, you are but 2 leagues from the land in 15 or 16 fathoms, and may discern the coast plainly, which makes in a level declivity; instead of which, at Point Palmiras, you find such depth only to the East of its islet, and at 4 leagues from the coast, which being much lower is hardly seen, 3 sandy downs to the southward being the only risings perceived there.

When you come from the offing to make False Point directly, you do not see the objects before mentioned, except a thick and even wood, which having nothing of the kind near it, becomes the principal mark. Having sailed about 4 leagues from False Point, when it bears S. W. there is to the N. E. an opening like the entrance of a mid-dling river.

Off False Point, in 14 or 15 fathoms, the course to attain the same depth to the eastward of Point Palmiras is N. E. 15 or 16 leagues; but you must allow for the ebbing and flowing of the tides; it is high water on full and change days at 8 o'clock 30 min. the flood sets to the W. N. W. and N. W. at its beginning, at $\frac{1}{2}$ flood it sets to the North, and at $\frac{3}{4}$ flood to the N. N. E. and N. E. The ebb runs the contrary way. The best depth is to keep in 14 or 15 fathoms, soft ground; nevertheless, if in this track you should find a different bottom, you need not be surprised. "About 5 leagues N. E. by E. from False Point steering N. E. I had," says Mr. D'Après, "soundings of red sand for above 3 leagues, and thence oozy, as far as Point Palmiras." The change of the sand shews you are near the bank, which is fine hard sand. East and West of this bank, the soundings are sand, gravel, broken shells, and specks without shape like bruised pepper. You often find, in 17 or 18 fathoms, soundings of black and red ooze, with broken shells; near the land, in 11 or 12 fathoms, it is sand and red gravel. When in the night-time you find these last soundings, you may round the bank, steering North and N. by W. and when in this course you meet with soft ground, you will easily know whether the bank

bank is doubled, because in such a case the depth diminishes but $1\frac{1}{2}$ fathom for the space of a league; on the contrary it decreases very fast when it is not doubled. If the winds blow from the westward, you may lie close to the bank, in 10 or 11 fathoms, without fear; you have soundings of fine sand, frequently mixed with fine gravel; sometimes they are unequal, as from 10 to $7\frac{1}{2}$ fathoms. But you must beware of coming into 5 fathoms, for then you approach the edge of the bank; and the rocks appear distinctly upon the shoalest part.

Be careful likewise not to keep too far off the bank, during the westerly monsoon, because you run the risk of losing soundings, by the winds which then blow from that part, and by the currents setting to the eastward. If this should happen, you must lose your passage, and will be obliged to winter at Chittagong, whence you cannot get out till November or December.

On the contrary, when the winds blow from South to S. E. as it often happens in April, May, and June, you may keep in 16 or 17 fathoms, till you have doubled the outermost part of the bank.

The Islet off Point Palmiras is very discernible in coming from the southward, appearing very distant from it, though not above $\frac{1}{2}$ a league at most. If you are got down within the bight between False Point and this small island, so that it bears to the eastward of North, you must directly haul off, to keep clear of an elbow of the bank, which runs out 2 leagues to the S. E. by E. of this same island: you may approach it in 12 fathoms, but come nothing under. In case of a southerly wind this instruction is much more useful than in any other case, because then you would have the greatest difficulty to get clear of it.

About 16 or 17 leagues S. E. by E. from Point Palmiras, and about 21 east of False Point lies the SCHIEDAM SHOAL and ROCK; Captain *La Touche*, who first mentioned it, says that a Danish captain assured him he had seen this shoal dry, and that having been carried off the coast by a gale of wind, the depth increased upon him to 60 fathoms, and afterwards diminished by little and little to the sight of it. "This shoal," adds M. *D'Après*, "has been searched for accordingly, but could not be found; however it cannot be amiss to keep the lead going."

DIRECTIONS FROM POINT PALMIRAS TO THE ROADS OF BALLASORE AND PIPLEY, OR PEPLY.

HAVING doubled the bank or reef of Point Palmiras, when the islet bears W. by S. a little southerly, the best course to go to anchor in BALLASORE ROAD in 5 fathoms, at low water, is N. N. W. about 9 leagues. You should be careful to observe which way the wind blows, in order to make sure of this course, because in the westerly winds

winds you must keep your luff to avoid falling to leeward of the road; the coast therefore must be kept on board in 7 or 8 fathoms, but you may approach the road in 6. You meet no danger in this bay, but the bank of Kannaka, which breaks at low water, and on its edge has 5 fathoms, hard sand. The west coast is planted with trees all along, except for the space of a small league to the westward of the river: this part, void of trees, serves to shew its entrance, which has on the west side a little white house (the English bankshall, or storehouse); on the east side are some sand-downs, behind which you see plainly a little wood when you go too far to the eastward of the entrance.

The marks for good anchorage, when the *Nelgringe* or *Nilgur Hills* can be seen, are 1st, the end of the Long Hill to the south-westward of the others, W. $\frac{1}{2}$ S. 2d, The Middle one, which appears the highest, and is separated from the rest, W. N. W. $\frac{1}{2}$ W. 3d, The Little one on the north-east side, N. W. by N: the entrance of the river North and N. by W.

It flows in Ballasore Road, at full and change, S. S. E. and N. N. W. or $\frac{1}{2}$ an hour past 10 o'clock. The sea rises here 10 feet in the spring, and 7 in the neap tides. The ships that intend to anchor in 5 fathoms, at low water, ought to pay great regard to this.

If in cloudy weather (when the Nilgur Hills cannot be seen, and the entrance of the river is hardly distinguished) you seek the 5 fathoms, because in this depth you are at least 4 leagues off shore, you must then have recourse to the marks already indicated, that is to say, the discontinuation of the trees to the westward, and the downs that lie along the eastern bank, by which this birth may be known.

It is reckoned about 9 leagues E. by N. and E. N. E. from Ballasore Road to RIPLEY or PEPLY ROAD: in this track you keep in 6 fathoms, at low water. Pepley is known by a pagoda to the westward of the river, and a thicket of trees very near it, which are sufficient to distinguish it; if you cannot see the pagoda, you must bring them to bear N. W. by N. in order to get into good anchorage. If with a small ship you coast it in less depth, you must take care of a bank, opposite the river, which projects 4 miles off the coast.

It is computed 4 leagues from the anchorage of Pepley to the first brace or channel to enter the Ganges, or Hughly river.

The ships bound up the Ganges are not always obliged to anchor in Ballasore Road for pilots, because you frequently meet their boats as soon as you have doubled Point Palmiras. Each nation have their own, nor is it proper to use them promiscuously, or not to give the preference to those of your nation; such accidents have befallen the commanders who have trusted the pilots too far at first sight, that the greatest caution is required in their choice.

INSTRUCTIONS FOR SAILING ROUND THE REEF OFF POINT PALMIRAS,
INTO BALLASORE ROAD AND OVER THE BAR.

By JONATHAN RANSON, Pilot.

“**T**HOSE who design for Bengal, in May, ought to time their departure from the coast so as to get down before the 25th, otherwise, without necessity requires it, I would see the best part of June over, so as to round Point Palmiras before the 25th of June; by which means you may avoid the bad weather, which generally happens in that interval of time. During these months, along the Coast of Orissa, and in Ballasore Road, the winds blow hardest at S. S. W. and S. W. the air being so very thick and hazy, that sometimes you must be very near the land to see it.

“ The bad weather, which happens at this time, is generally preceded by fine clear weather, and light winds, unsettled and varying all round the compass, till they fix in the N. E. quarter, contrary to the Monsoons. These gales will last sometimes 3 or 4 days, with rain and thick weather, though some years are much more favourable than others.

“ These winds and bad weather do not reach far up the coast, for which reason, it is safer, when you see the appearance of the tornadoes, to put to sea, if the wind will permit, much rather than to attempt to ride it out in Ballasore Road. In such a case consult the pilot, if aboard, taking due care to keep in soundings off the coast, after you have rounded Point Palmiras, because the current, at this time of the year, sets strong off the coast, and you might find it difficult to get in again.

“ You ought to avoid coming into Ballasore Road, betwixt the latter end of May, and the latter end of June; and from the latter end of September to the latter end of October, which last is generally the breaking up of the S. W. Monsoon; though some years it does not break up before November, but that is not very common.

“ It is not proper to attempt to cruise, or lay off POINT PALMIRAS, or any where to the southward of it, before the current begins to shift to the southward, which is about the middle of July, after which ships may ply to windward. In August the current off the Point, and along the coast to the southward, runs so very strong, that sometimes it will require a three knot gale to stem it; this is a southerly current. As most people endeavour, when bound to Bengal, to make Jaggernaut pagoda, or strike soundings off thereabouts, you cannot lay out of their track somewhere betwixt Point Palmiras, and 15 or 20 leagues to the southward of it; but in my opinion it is best to lay off False Point in 25 or 15 fathoms.

" About the middle of September, it is time to think of a harbour, to avoid the Monsoons breaking up upon you. It is common for most ships bound to Ballafore Road, to get soundings off FALSE POINT, which, in clear weather, may be seen off deck in 15 fathoms, being low land with trees; and about 2 leagues to the northward, in the bay, are two very remarkable sand hills. The soundings of False Point differ very little from those off Point Palmiras. The course from False Point, in 15 fathoms water, is N. E. by E. about 14 leagues. Between the two points, the land is lying in. Steering the above course, you will come into 16 or 17 fathoms, sand, shells, and small stones: by the soundings and the depths of water, you may conclude you are off the true point. Captain Barton gives an additional rule to know the true from the false point: that is, if you are off False Point, and steer N. E. you will shoal your water, but after you are past the true point, you will immediately deepen your water, by steering N. E. which is no more than to say, that if by steering N. E. you deepen your water you must haul up, and if by hauling up N. N. W. you keep your depth of water, you are round the true point.

" Note. The False Point appears like a small island; the soundings soft and oozy: the best depth to keep in is 16 fathoms.

" The course from Point Palmiras to the ROAD is N. N. W. 9 or 10 leagues, due regard being had to the tides. It flows in the road 10 o'clock, on full and change.

" From the latter end of June to the latter end of November, off the point there is little or no flood, only on the springs; but on the contrary, a strong outset, occasioned by freshes of the rivers, which set very strong round the point, as observed before. If it should happen, in the night or thick weather, that you have hauled up too soon for the road, you will find it by the shoaling of the water faster than ordinary; for in the right track you will shoal very gradually: in such a case haul off a little, keeping in 15 or 16 fathoms, until you find a stiff bluish coloured clay, mixed with sand and stones, to come up with your lead; or there is a spot, though not always met with, of yellowish clay and stones; and by either of these two grounds, you may know yourself to be to the northward of the true point, and can haul boldly for the road. What I have said above to round the point, may be safely practised either by night or day; but if you have day light, and fine clear weather, that you can see the point and breakers, you may round it in 12 or 14 fathoms with safety, in case you have a bold wind to borrow.

" As many people have mistaken False Point for the true Point Palmiras, by which means they have got into False Bay, before they have found it out; and some on the contrary, by taking Point Palmiras for the False Point, have got among the sands before they knew where either of them was, by trusting too much to the log; to prevent these mistakes, make use of the following remarks:

" Betwixt the two points, in the False Bay, you will find a very soft ooze, as I have said before; and to the southward, or any where within the true point, it is a stiff mixed ground of bluish clay, with sand and broken shells, and likewise stones in some parts.

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" If

" If you should happen to be among the sands, with a strong flood tide, you must immediately anchor, and wait for the ebb. You may know the SEA-REEFS by the soundings; the lead sticks hard upon them, bringing up silver specks: they are so hard on the tide of ebb, that your lead will rebound, as from a rock. Both Eastern Sea-reef and WESTERN, as well as the Braces, have the same.

" In the channel, betwixt the sands, you will find soft muddy ground, and about 3 fathoms water more than over the reef.

" If you intend to weigh with the ebb of the southerly current, stand to the westward; but in the S. W. Monsoon come in no less water on the reef than 7 or 8 fathoms, by reason of the great sea that runs upon it. But if you should be so far in as to have less water over it, it would be better to tack, and work out between the sands, until you get into 12 or 14 fathoms, and as you have the wind, direct your course for Ballasore Road; and come in no less water till you judge yourself at the Western Sea-reef.

" As it sometimes happens you may have occasion to send a boat in, over Ballasore Bar, observe the following directions, viz. Bring the flag-staff at *Bullramgurry*, or the Bankshall-house, to bear N. N. W. by a compass in the boat: keeping it at that bearing all the way in, it will lead you to the outward beacons, being poles set upon each side the entrance of the BAR. From hence the channel lies directly towards the south-west point of the opening of the river, where, at convenient distances, are the like marks set up on the extremity of the shoal, one on each side. Upon the bar, at low water spring tides, in the dry seasons, there is not above 2 or 3 feet water; it flows 16 feet perpendicular, and 10 o'clock makes a full sea, at full and change. To avoid running any risk, it will be necessary to caution the officer who goes in the boat, to wait for the last quarter flood to carry him over, by reason the first quarter the sea breaks very high."

DIRECTIONS FOR SAILING FROM THE COAST OF COROMANDEL TO BENGAL, AT DIFFERENT SEASONS OF THE YEAR.

THE most favourable time for sailing to Bengal, is from the end of February to the middle of September; if you depart from the Coromandel coast towards the end of February, and during the month of March, it is necessary to keep a good offing, in order to reap the advantage of the South and S. S. W. winds that blow here; whereas near the coast they often vary from N. E. to S. E. Then shape your course to make the Coast of Orissa, in about the latitude of 19° , and coast it thence to Point Palmiras.

The ships that sail in this season, from the Malabar coast to Bengal, without touching at any place on that of Coromandel, ought to keep the island of Ceylon on board, as far as Batecalo, and thence make a stretch to the coast of Orissa, as above.

During the months of April and May, when the winds blow more frequently from the southward, and are in their full force, you must, in like manner, make the Coast of Orissa, guarding particularly against the currents (which set northward and commonly with the wind) and keep a good offing, as soon as you experience them; because with S. E. winds you will be troubled to clear the coast, if you follow the different bights which it makes. When you see Jaggernaut Pagoda, keep in from 15 to 20 fathoms as far as the reef off Point Palmiras, which you must not approach nearer than to 18 fathoms.

As the westerly Monsoon is at its height in June, July, and August, it is necessary to keep more to windward than in the preceding months; that is to say, to make the coast in $18^{\circ} 30'$. This precaution is the more requisite, as you may be often mistaken in the estimation of your course, by the currents, which generally are governed by the direction and force of the winds; and this is the reason that ships fall in with the land more easterly than they imagine. When you are within sight of the land, keep in between 12 and 16 fathoms, and for the rest conform to the directions above; particularly concerning the reef off Point Palmiras, which you must keep well aboard*.

If you sail from Madras to Bengal after the 10th of September, the following general instructions will direct you.

Steer first E. N. E. 100 miles, and then N. E. by E. 200 miles. If you find the S. W. monsoon strong, steer a course to carry you directly to Point Palmiras.

You will make about $7^{\circ} 10'$ easting, if you have no easterly current; and with the above direction you will strike ground in lat. $20^{\circ} 20'$. Should you find a southerly current you may depend on it you are at no great distance from the shore, and keeping at two degrees off, you have little or no stream either way. After you have made 7° M. dist. in lat. $20^{\circ} 20'$ you will have ground at 70, 80, or 90 fathoms: if grey sand mixed, be certain that you are to the eastward of Point Palmiras, and if after it, you get in shore in 17, 18, 19 fathoms, you may depend it is the true point.

But the following instructions, by Capt. *Harrison*, will be more particular.

"Ships who sail from the Coromandel coast to Bengal, after the latter end of September, or beginning of October, must make the best of their way to the eastward, till they get 4° or 5° M. dist. and then, if the wind will permit, they may steer E. N. E. till they have made altogether 10° easting. Then they are to work to the N. E. endeavouring to make the Coast of ARRACAN, or the islands near it, in 18° or 19° lat. North.

* Captain *George Williams* gives us the following prognostics of a GALE in this Monsoon. "If you find," says he, "the S. W. wind die away, and you have light airs all round the compass, with intermittent calms; the weather being clearer than common all round the horizon, objects looming, a murmuring like wind in the rigging, a very smooth sea, and cobweb streaks in the rigging, then you may expect a hard gale."

" The meridional distance you will make is very uncertain, perhaps 11° or 12° , and frequently a great deal more. You are to observe, in case the wind proves contrary, not to work to the southward of Negrais; but if the wind is northerly, stand to the eastward of it, and if easterly, to the northward; not so long however as to endanger your coming on the coast of this side Palmyra; for if you do, there will be little probability of your getting your passage, as the N. E. winds will be more constant, and the current stronger to the southward. The Coast of Arracan, and the islands are very bold; you may coast along shore, having very regular soundings to 6 fathoms, mostly soft mud and sand. We made the land in $18^{\circ} 54'$ coasting until we were in $21^{\circ} 32'$, and observed the nearer we ran along shore, the more regular was the current, or rather tide, for it set 6 hours to the northward and 6 to the southward; whereas, in the offing, it ran stronger and longer to the southward than to the northward. In $20^{\circ} 30'$ latitude North, there is a small low island, which runs from the main 3 or 4 leagues; and when you are the same distance to the westward of it, you have uneven soundings: from the northernmost part of this island runs a chain of rocks quite to the main; and at a great distance it makes like a vessel under the land at an anchor. After you get in with the coast, and have soundings, take care not to get out of them again, for should it fall calm, or the wind spring up at N. E. you would find it very difficult to get the land on board again, by reason of the strong southerly and westerly currents; therefore, work along shore, where you will have faint airs variable, and observe your drift, by the lead; for trying your current by the boat is not so certain, as it frequently sets, one on the surface and another below the water*; this occasions such strong eddies, that you will not be able to steer your ship when there is wind enough to go 2 knots.

" After making the Coast of Arracan, and working along in soundings, when you come in the latitude of $21^{\circ} 15'$ North, or thereabouts, you will meet with a *Swatch*, where you lose them for a short time. Make the best of your way over it, and when you have crossed it you will shoal your water pretty fast, perhaps to 9 or 10 fathoms, but come no nearer; especially if you have hard ground, haul off to the southward, till you soften again. This is a good mark to know you are near the tail of the sands. From this keep along in, between 12 and 20 fathoms, keeping your lead going, with tallow on it, and likely you will have some casts with sandy ground; if you meet with glittering sand, you are on the tail of the EASTERN SEA REEF; it shoals gradually upon it, therefore do not be surpris'd; but if you have sandy ground, under 14 fathoms, it is well to heave till you deepen again, working along in this manner. When you come past the tail of the WESTERN SEA REEF, and near Ballafore Road, you will, if clear weather, see the *Nilgur Hills*, bearing W. by N. $\frac{1}{2}$ N. and N. W. $\frac{1}{2}$ W. if so, there being a flat, which you will plainly discern to bear N. W. in 10 fathoms water, you are in the road: but in the night-time, or in cloudy weather, you will know when you are in the road, by the stiff

* This appears to be against all the laws of Hydrostatics.

mud, intermixed with large stones, some of them hard, others soft, which you may break with your teeth. Work along to the westward, observing your tides, till you come into 10 fathoms, when you must anchor. If you have no pilot, it will be necessary to fire a gun once or twice, night and day, by which means any pilot sloop that is in the road may come to you."

To these directions of Captain *Harrison* must be subjoined the following ones by Captain *George Williams*. "If by any unforeseen event," says this officer, "you fall in with the land to the southward of the False Point, you risk the loss of your passage, or a very great delay, for want of favourable winds to get to the northward and stem the violent currents, which set S. W. from the latter end of September till February; but their greatest force is in November and December, when they run 3 miles an hour. It is therefore best for a ship so circumstanced, if she would double Point Palmiras, to take advantage of the tides, by anchoring when they make against her.

"The following courses have never failed obtaining a passage so late as the latter end of September, viz. E. by N. about 150 miles, E. N. E. 140, N. E. by E. 120, N. E. 90, N. E. by N. 180; then North till you strike soundings in 40 or 50 fathoms, which will then be 100 miles E. by N. or E. $\frac{1}{2}$ N. from Point Palmiras. But some ships have taken a wider range, and stood from Madras, viz. E. by N. 153 miles, E. N. E. 258, N. E. by E. 187, N. N. E. 204, and North till they struck soundings in 40 or 50 fathoms, which will bring Point Palmiras nearly E. N. E. 180 miles distant. She must then coast along the heads of the sands westward to Ballasore, and observe, if it happens to be light airs or calms, to anchor, lest the currents set her to the southward, and she loses her passage.

"But a ship, which leaves Madras late in October, ought to take a still wider range than in September; she should therefore steer, if the wind permits, East $2^{\circ} \frac{1}{2}$ —E. N. E. $3^{\circ} \frac{1}{2}$ —N. by E. 3° , and then N. E. till she sees the Coast of Arracan; on this coast she will have strong S. W. winds; she must avoid that shore, and steer N. N. E.—North, and N. N. W. till in soundings; and then along the sand heads as above, she will keep sight of the shore all the way.

"The course from the Negrais to Arracan river stretches about North to N. by W. From the Broken Islands of Arracan to Sun diva or Sun deep, and to the Sagor Sands W. by S. and W. S. W., but when past Sagor, the coast where the pilot sloops lie from October to January, runs W. by N. and W. N. W. The distance between Arracan river and Point Palmiras is about 100 leagues, and the whole bottom of the Bay of Bengal, from Sun diva Islands to Sagor, is low swampy ground, covered with bushes, and intersected with many creeks by which the Ganges discharges itself.

"Within the Island Cheduba, there is a good passage for any ships; fresh water is to be had here (looking well after the natives), and both that island, and those off Arracan river

river yield good shelter to ships in bad weather—observe in working on this coast, to keep some anchors clear, a good look out, and the lead going. If a ship should be in want of water, or in bad weather, they may anchor under, or within Cheduba, or Barongo (the Broken) islands in the mouth of Arracan river, where the channel is deep and good, as the wind and their situation will admit.

“ But ships upon this coast, bound to Bengal, between the middle of October and the middle of December, not wanting water, and the weather tolerable, had best stand along shore at 8, 9, or 10 leagues distance, which will keep them in 25 fathoms water, until they get the height of the Arracan islands in latitude from 19° to 20° North; and then edge off N. W. or rather N. W. by W. They will deepen their water, and perhaps, though seldom, lose soundings: however by sailing 20 or 30 leagues, they will again come into them.” Let them hold on to the N. W. till they get into 18 or 20 fathoms, then keep her W. by S. and W. S. W. which will carry them in much the same depth, till they reach the deep channel of the Ganges. They will then be about 2° westward of Arracan, in latitude 21° , or $21^{\circ} 20'$ North, and then perhaps the water will suddenly deepen to 30, 40, or 50 fathoms, then no ground. This is not to be regarded, but keep on W. by S. and in sailing 6 or 7 miles farther, they will again have 18 or 20 fathoms, in which they are to hold on this course till they again deepen their water: then you may rest assured that you are past Sagor sands, and should directly haul up N. W. or N. W. by N. until you get into 13 fathoms; steer afterwards W. N. W. W. by N. and that will lead to the track where the pilot sloops lie, in 9 fathoms, to which depth you will come by a very gradual decrease, all soft ground, though sometimes mixed with sand, shells, and rotten stones that easily crumble.

“ And observe, that ships bound this track, ought not, at any season to keep too near the Arracan shore, because with a N. W. wind they will be obliged to anchor, if in shore; whereas by being 8 or 10 leagues off they can make a good stretch to the N. E. or N. N. E. and this is more especially wrong in October, or later to December, because in October there are often southerly winds in the bay; besides if the coast is once seen, it can always be reached again, for there is little or no current setting from it, and late in December the current is quite done all over the bottom of the bay; so that should a ship fall to leeward of Palmiras she can easily work round to Ballasore Road, provided she keeps close to the shore and makes use of the tides.

“ *Note.* The courses above-mentioned are to be understood as true courses, therefore ships ought to be careful in observing the set of the current so as to shape a true course. The true set of the current can be nearly ascertained by observing how the lead line grows from the ship after veering out a good deal of line.

“ The Arracan coast is pretty high land, and plainly seen at 10 leagues distance.”

The observations of Captain *Hicks*, on the track of his ship the *Babar* (bound from Madras to Bengal in the contrary Monsoon), will be found equally useful as the preceding instructions.

"The *Babar* sailed the 27th of October, 1770, and arrived in Ballasore Road to the pilot the 25th November following. When she put to sea from Madras, the wind was from the northward, but very little of it; yet with all sails set, went from 1 to 2 knots, steering East, and continued to do so all along the Coast of Coromandel; but so strong did the current set in on that coast, that she never could get above 4 leagues off shore, till she passed the Friar's hood on Ceylon, and even set so near in at Allemparva, that her anchors were got ready to bring up.—It may be observed that, on the north-east coast of Ceylon, where she was becalmed for a whole day, the ship drove entirely by the current in 24 hours 90' on a S. E. by S. direction; and from losing sight of Ceylon till she reached the sand heads, experienced little or no current any way.

"Had this passage been made one month later in the season, it would have been necessary perhaps to have crossed the Line, to run down the easting; as by the end of November the North and N. W. winds have ceased to blow to the northward of the Equator, and are scarcely ever sooner met than in one degree south latitude. And this the same ship had experienced the year before from Bombay to Bengal. She left the former port, December 5th; on the 10th took a departure from Cape Comorin, steering with the wind on the beam, and studding-sails set the whole passage, when the weather would admit of such sails being out; crossed the Line the 20th; in 50' South met northerly and N. W. winds strong; went no farther out than $1^{\circ} 15'$ South; ran down 16° easting to the southward of the Line; crossed it again on the 26th of December, and on the 26th of January following moored at Calcutta.

"It may be proper to observe that the *Babar* did not in that track keep in with the eastern shore of the Bay; but from the latitude of the Negrais, and about one degree West from it, she stood from it (wind varying from the N. E. to N. N. E.) to the Coast of Orissa, and made the high land of Mannickpatam the 17th of January; so that she was 11 days from Bombay to Cape Comorin; 4 days from thence to the Line; 6 days South of the Line; 22 from the Line to the high land of Mannickpatam; and 9 days from thence to her moorings at the town.—*N. B.* When she took her departure from Cape Comorin, though the wind was at N. E. and N. E. by N. she steered S. S. E. and South to avoid seeing Ceylon, or to be entangled with the baffling winds which surround that island for a space of 15 leagues."

**DIRECTIONS FOR SAILING FROM BENGAL TO MADRAS,
AND THE COAST OF COROMANDEL, &c.**

FROM the middle of August to April, you may sail from Bengal to any part of the Bay; but earlier or later it is very difficult to get out of the river; and though ships, which are going only eastward or southward, may sail 10 or 15 days later, yet those who put to sea after the beginning of April, for the Coast of Coromandel, will find it difficult to go to the westward, and perhaps lose their passage.

In sailing from Bengal to the Coast of Coromandel, in August or September, you will meet with unsettled weather, sometimes moderate and fair; sometimes accompanied with hard squalls, thunder and heavy rains; the winds being usually from S. S. W. to W. N. W. and now and then S. S. E. Ships should, therefore, keep close along the Coasts of Orissa, and Golconda, from 15 to 30 fathoms, for the benefit of the currents which begin to run there to the S. W. The wind, often blowing from the land, renders it difficult to keep near the shore, especially between Vizagapatam and Arimegon; besides, standing off shore, is sometimes very advantageous; however, a ship ought seldom or never to go out of soundings. Early ships will have sometimes little or no current, and those who sail later will find also the current fail, when southward of 7° North; but if they keep near the shore, there is none against them, (except perhaps a fresh out of the adjacent rivers) and the winds are sufficiently variable, to get the passage. They must seize every opportunity, and tack as often and quickly as it is required by the changing of the wind.—*Note*, By going close along shore, it is not meant you should round the Bays of Coringa, Masulipatam and Pettapilly; you must on the contrary thwart them from point to point.

During the months of October and November, the navigation should be much the same as in September; but no ships go from Bengal to the Coromandel coast in those months, because the strong N. E. winds, sea and currents, render it extremely dangerous. Though some ships, on extraordinary occasions, have rid out the whole Monsoon, in 12 or 20 fathoms, yet it can answer no commercial purpose; and none ought to be on the coast from the beginning of October to the latter end of December.

Between the 10th and 15th of December is soon enough to leave the mouth of Bengal River for Madras, and from that time to the middle of January, the best course is to the S. W. directly to make Arimegon Hill. As the ship approaches the coast, she will probably have fresh gales, and a strong current to the southward; therefore keep the lead going, and a good look out. Arimegon Hill, in clear weather, will be seen when your ship

ship is 2 or 3 leagues without the north end of Arimegon Shoal; but that sand being very steep, it is dangerous to run in with it, when dark: whoever does, should go flanting with the sand S. W. by S. or S. S. W. under an easy sail, casting the lead every mile, and the moment you strike ground, haul off shore till clear of it. No stranger ought to go within the Arimegon Shoal, at this season, the channel being too narrow. See p. 274.

* If a ship in the evening is short of Madras, it is better to anchor than lie to; but if the sea is too great, turn to windward, it will save lee way.

At this season it is best to anchor in 9 or 10 fathoms, Madras flag-staff West; because the boats, being light when they come off, can easily row against the wind along shore, and go ashore loaden, with a large wind; which they could not do if the wind was much southward.—*Note*, Anchoring to the eastward of the port, is to be observed at every port on this coast.

Early in January, a ship will find much the same currents and winds as in December, but more moderate: she ought also to follow the same track, except the easterly winds should be very faint; in which case it is best to keep more to the southward, and not go within 20 leagues of the land, until the latitude of Madras, and then run West for the road. This ought chiefly to be done, if the ship leaves the pilot in January; but whether she leaves him early or late, if by meeting with light winds, she steers some days S. S. W. or S. by W. and the winds should afterwards begin to blow fresh from N. E. perhaps in 16° or 14° north latitude, it is best for her to steer away West—W. by S. or W. S. W. so as to fall in with Pullycate, or rather with the south end of Arimegon Shoal, especially if it blows very hard, and is like to continue.

The month of February is the finest in the year, through all the Bay of Bengal: ships, in the middle or eastern parts of the bay, are generally sure of fine breezes from the eastward and northward; and near the western shores, of land and sea-breezes, or moderate gales from the W. N. W. to S. W. therefore, those who are bound to the Coast of Coromandel, in this month, from Bengal, Orissa, or Golconda, should keep well off shore, to avoid the calms, land and sea-breezes, and N. E. currents which then prevail from Ceylon to Ballasore. In sailing from Bengal, if early in the month, it is best to steer S. by W.—S. S. W.—S. W.—W. S. W. and West; and if it blows fresh from the N. E. to fall in directly for your port. But it will generally be better to run near the coast 8 or 10 leagues to the southward of the port, because you are always sure to get back; besides, on getting soundings, or seeing the land from the mast-head, the ship can easily reach her port, by hauling upon a wind W. N. W.—N. W. or N. N. W. as the latitude requires. Late in February, it is best to steer from the pilot South for some days, then S. by W.—S. S. W. and S. W. &c. so as to fall in 20 or 30 leagues to the southward of the intended port; for about the time you approach the coast, not only the northerly currents run strong, but the S. W. wind begins to prevail along shore;

therefore you must expect being obliged, when near the land, to steer W. N. N. or perhaps N. W. close hauled with a leeward current, and you are to make allowance accordingly, by keeping well to the southward in the offing, while it is in your power.

Ships bound from Bengal to any part of Orissa, or Golconda, ought, in the same manner, to keep off shore, till they are to the southward of their port, according as it is late or early, and the N. E. wind fresh or faint.

Ships that leave Bengal, in March or April, for the Coromandel coast, ought more especially to avoid going to the westward at first. Their best track, supposing the wind fair, is S. by E. and South, keeping about 15 or 20 leagues to the eastward of the meridian of Point Palmiras, till in 13° or 12° north latitude, and then S. S. W. and S. W. till they see Ceylon about Batecalo. But as the S. W. winds range the Coast of Orissa, at this season, instead of a fair wind, ships usually leave the pilot with a fresh gale between W. S. W. and South. In this case the best way is to steer, close hauled, to the S. S. E. or even E. S. E. as the wind will permit, rather than tack. These courses will, in a few days, bring them into light breezes, generally from the N. E. quarter, with which they ought to steer South—S. by W.—S. S. W. &c. till they see Ceylon as above. The wind will sometimes continue so long in the S. W. quarter, that a ship will be 3° or 4° to the eastward of Point Palmiras, before they change, and perhaps in 15° . Then, when the wind comes fair, it is best to shape your course direct for that part of the bay which is in 13° or 12° north latitude, and 20 leagues East of Point Palmiras; and thence directly to Batecalo, stand upon either tack, as the wind will permit. The N. E. breezes commonly begin between 17° and 15° north latitude, when well to the eastward; but sometimes, after leaving the pilot, you will have light W. S. W.—West—W. N. W. and N. W. winds, which will continue till the ship is in 14° and even 13° latitude. Let nothing, however, induce you to go westward of the meridian of Point Palmiras, but steer South: by doing this you will certainly meet with easterly winds at last, which to the westward you could not have found; or at least they would be short, weak and unsteady, with much calm. On the other hand, it is by no means advisable to go near the Andaman Islands, because they make a dangerous lee shore, with a gale from the westward, which sometimes happens late in April.

If you sail before the middle of March, and are bound to the northward of Madras, you need not see Ceylon; but being got into 10° or $10^{\circ} 30'$ of north latitude, steer West for the coast. The ship will always fetch to windward of Madras, because she will not get into the S. W. winds and northerly currents till near the land. But those who sail later, or even in that season, if bound more southerly, ought to have sight of Ceylon; and thence coasting, not too near Point Pedro, they may cross the gut, or opening of Palk's Bay, to Negapatam, and go to any other port on the coast. Sometimes
squalls,

squalls, generally light, with thunder and rain, happen in this passage, especially near Ceylon, which is of a great advantage to late ships, in this calm season. They ought to be very careful when the weather is fair and the breezes variable, to carry what small sails they can muster, and trim to every breeze that offers, which is too often neglected, particularly in large vessels.

DIRECTIONS FROM BENGAL TO THE MALABAR COAST; BOMBAY, SURAT, &c.

SHIPS that leave Bengal between the 15th of August and the 10th of October, bound to Surat, must work close along the shores of Orissa, Golconda, and Coromandel, to Madras or Pondicherry, as mentioned above; and thence, as the winds are generally variable in October, they steer over for Ceylon, taking care not to go too far from the shore, for fear of losing the current; except it is late in October, or the winds hang easterly. In either of these cases, it will be better to stand off shore, for fear of being entangled in the bight, and not to come nearer Ceylon than 10 or 20 leagues, till about $7^{\circ} 20'$ or 7° latitude, where it is proper to see the island, because the current runs swiftly round it. Thence, having coasted round the Bassas, keep pretty near the shore, till you see Colombo, and then stand off for Cape Comorin. The winds and weather in October, round the south side of Ceylon, are unsettled: sometimes there are hard squalls from the land; sometimes much calm, or trifling and even fresh winds from the sea, with squalls and rain. The squalls always give warning; and it is proper to anchor when you see them coming off shore, that you should not be driven from the island: the same ought to be done in calms, when the current sets off shore.

If ships, in this season, after having coasted round Ceylon, as far as Berberyn island, should meet with a brisk gale from the northward, it is best to stand over, close hauled, for Cape Comorin, and not lose time in working up to Colombo; but Berberyn island should bear East before you quit Ceylon. In crossing the Gulf of Manar, the winds will now be found variable, sometimes fresh, and often faint; but a ship having reached Cape Comorin about the middle of November, will have fine land and sea-breezes, to work along shore, quite up to Surat. These breezes sometimes blow off and on shore about W. S. W. and E. N. E. but this is seldom, for the wind generally comes off in the night, at N. E.—N. N. E. and perhaps North, and the sea-winds come in the forenoon at West—W. N. W. and N. W. a short calm generally intervening. A ship must, therefore, edge so far off shore with the land-wind, that the sea-breeze may bring her in again to stretch off with the first of the next land-wind. This will commonly be done by steering

ing with land-breezes, N. W. by N.—N. W.—N. W. by W. or for an hour or two W. N. W. and with the sea-breezes N. by W.—North—N. by E. and N. N. E. according to your distance from shore, and as these breezes are more or less northerly, and of short or long continuance. By this management a ship makes all possible advantage on each tack, and often saves the trouble of anchoring: whereas, if she has not a sufficient offing, when the sea-winds begin, she will be in with the land, and obliged to anchor before they are half done, and a fine stretch of 8 or 10 miles to the N. by W. and North, will perhaps be lost. On the other hand, if the ship stands too far off shore, the sea-breeze will fail, perhaps, before she is within 6 or 8 miles of the land, and in that case, a good part of the land-winds will be done before they reach her: besides, if it falls calm, and the swell or current set to the southward, she must anchor in deep water.

Between the middle of October and the middle of December, a ship will commonly meet with moderate gales after leaving the pilot; and as she goes to the southward, she will find fresh gales north-easterly, with squalls and cloudy weather, especially near Ceylon. As the current then runs strong to the westward, the best course, for some days, is S. by E. then South—S. by W.—S. W. &c. so as to make Ceylon in the latitude of 7° or $7^{\circ} 20'$ North. The current renders the difference of longitude very precarious; therefore when you come into the latitude of $8^{\circ} 20'$ North, you ought to run West all day, looking for the land at mast-head, S. W. by S. or S. S. W. In the night you must carry an easy sail, heaving the lead every 2 miles, and keeping a good look out. But if the land is seen northward of $7^{\circ} 30'$ North, you are to haul off, for fear of being entangled in a lee shore.

A ship having reached Ceylon, ought to coast round it, at a moderate distance, to Point de Galle. She will have no occasion to anchor, there being now no land-squalls or calms, but a brisk gale and strong current from the eastward. About Point de Galle, the wind will begin to fail; she ought, therefore, to keep nearer shore, and avoid opening the Gulf of Manar, till as high as Berberyn Island, and thence stand over, close hauled, for Cape Comorin. Ships in this season will commonly have fair weather, and a fresh gale, between North, and N. E. by N. but if this gale should prevent your getting as high as Berberyn, it is generally better to stand over, than lose time in working along shore.

From Cape Comorin, you ought to work up the coast, with land and sea-breezes, as it has been said already; but if these breezes are intercepted by a brisk gale from N. N. W. to N. W. which sometimes happen in December for 3 or 4 days, you should turn to windward, or, if nothing can be gained that way, anchor till the gale ceases.

Ships leaving Bengal between the middle of December, and the latter end of January, will commonly find much less current, and fairer weather, with steady, but moderate gales from the N. E. than in the preceding month; therefore a S. by W. course, from the pilot, is now best for some days; then S. S. W. &c. going almost in a right line for
that

that part of the bay, in latitude $7^{\circ} 30'$ North, and 20 or 25 leagues eastward of Ceylon. From thence they ought to steer West, &c. as already directed, and make the island about Julius Nave, or in latitude $7^{\circ} 0'$. The weather will then be fine, and the wind fair, with which they should coast round to Point de Galle; and having brought that point eastward, stretch over to Cape Comorin, with a moderate, perhaps a brisk gale from North to N. E. by N. which is usual at this season.

The directions for navigating from Bengal to the Coast of Coromandel, in February and March, are pretty sufficient with regard to the Bay of Bengal; it is only to be further observed, that the meridian of Point Palmiras should not be passed till in the latitude of 10° North, but if, at leaving the pilot, the ship is forced by the usual S. W. winds to the S. E. when a fair wind comes, let her shape her course for that point which lies South of Point Palmiras, in the latitude of 10° , or $9^{\circ} 30'$ North. From it steer S. W.—S. W. by W. and W. S. W. for the south side of Ceylon, between the Elephant and Dondra Head; and as no time should be lost, do not shorten sail; but when in the latitude of 7° or $6^{\circ} 30'$ North, steer about West, in the day, and S. W. all night. This perhaps may carry you into $5^{\circ} 30'$ North, but it matters not, as you will have the better wind for it; and when your westing is run down, which is about $5\frac{1}{2}$ degrees from Point Palmiras to the Elephant, a W. N. W. or N. W. by W. course will always bring you in with the island; because to the southward of 8° North, and about 2° westward of Point Palmiras, there is commonly a northerly current from 10 to 20 miles a day: this is what runs along the N. E. side of Ceylon, and requires 2 or 3 days to cross. When Ceylon is plainly seen, it is proper to keep 7 or 8 leagues off shore, for near Point de Galle a brisk gale from S. W. often begins, with which ships stretch over to Cape Comorin, and sometimes they are not able to weather it, which causes a loss of 2 or 3 days to work round.

From Cape Comorin you must work along shore, as well as you can, till it happens to blow fresh down the coast; it is then best to stand off shore (as if bound to Persia through the Lackdivas) but this ought not to be attempted till in 10° north latitude, for fear of being driven, by the southerly current, among the Maldivas: so that should weak land and sea-breezes, moderate variable winds, or southerly winds prevail, your best way is to keep along shore, and not stand off, till you can gain nothing; and that perhaps may be in 14° or 15° North; you need not stand to the westward, as far as ships bound to Persia, your business being chiefly to the northward; as you get nothing, the wind will commonly veer to the westward, and drawing near Cape St. John, it will come to W. S. W. and S. W.

INSTRUCTIONS FOR SAILING
IN THE NORTHERN PART
OF THE BAY OF BENGAL.

PART I.

SURVEY OF THE COAST FROM POINT PALMIRAS TO THE BRACES;
OF THE OUTLETS OF THE GANGES,
AND OF THE INTERJACENT RIVERS FROM HUGHLY RIVER TO ROYMONGUL.

By Captain JOHN RITCHIE, Marine Surveyor to the East-India Company.

“POINT PALMIRAS is to sea-ward encompassed by a bank of rocks and sand, on which the depth of water is very various, between 1 and 4 fathoms; it is in some places very steep to, there being 10 fathoms close to the edge of the bank, and not more than 3 upon it: the north-east edge is the steepest; to the eastward it is flat a little, and the south side is flattest of all. Perhaps it will be better for seamen to mention the manner in which it was examined, nearly as it is remarked in the journal. I traced the bank off Palmiras in the *Mercury* pilot schooner, attended by 2 sloops; and the account then given of it runs thus. We weighed anchor from Churinga Road, about noon, the wind south-westerly; and steered along shore towards Point Palmiras, in a depth from 2 to 3 fathoms, the ground variously hard and soft. To the northward of Kannaka or Rannaka river there is a flat, which reaches off from the shore, a league or more; it is all very shoal, and great part of it dries at low water. We passed along the edge of this shoal, in 2 fathoms water, the course S. E. and S. E. by S. When Kannaka river bore W. S. W. the depth upon the same course increased from 3 to 9 fathoms, in little more than a mile distance. Being now about 4 miles off shore, and the wind coming suddenly round to S. E. a fine working breeze, we tacked, stood into 2 fathoms water, and for the remainder of the days plied along the edge of the Palmira bank. E. N. E. from Point Palmiras, about a league distance, there is a dry sand, or island, extending

tending East and West, about 2 miles in length, and half as broad; it lies upon the north-east edge of the bank, and is detached from the point by a channel, with a sand in the middle of it, which dries at low water.

" I know not what depth of water there is in this channel; but while we were here, several coasting Paddy-boats, which came from the northward, went through it. All along the north-east edge of the Palmira Bank, the depth decreases very regularly in approaching it. This is to be understood, in the wake of, or abreast of the island only; for to the eastward of the island it is otherwise, as will be mentioned presently: and we stood on to within a cable's length, or little more, off the island, and tacked in 3 fathoms water: the bottom without this depth is soft, and here it is sand mixed with mud. When we had worked to the eastward of the island, about 2 miles, and were standing on to the bank (about sun-set) the water shoaled suddenly from 10 to 7, and then to 4 fathoms, as fast as the lead could be thrown at the last-mentioned depth; the vessel was immediately thrown into stays, and although she came about very quickly, yet we had not more than 3 fathoms, when the sails were trimmed. The wind by this time had drawn round to South, and on standing off E. S. E. the water shoaled to $2\frac{1}{2}$ fathoms, which obliged us to bear up to N. E. and upon this course the water deepened to 5, 10, and 15 fathoms, in 4 minutes of time. Here we anchored for the night; and I doubt not but every seaman will, by this account, perceive the danger of bordering too close upon the bank, with ships of great burden, especially at this part of it, where a ship in 7 fathoms water might take the ground, before the next cast of the lead could be thrown. In the morning we weighed at 6 o'clock, the wind variable from S. S. W. to S. S. E. and played along the eastern part of the bank: here also it is pretty steep, being from 12 to 7, and then to 4 fathoms, in about $\frac{1}{2}$ a mile distance. As we got round to the southward, we found the edge of the bank much flatter; when Point Palmiras bore West, we had 5 fathoms upon the rocky ground; and in standing on toward the point, about a mile farther, there were 4 fathoms, the bottom rocky, with sand and shells. Here we anchored, in order to observe the latitude of the point, which was found to be $20^{\circ} 43'$ North. In the afternoon, when we had made a stretch or two to the southward, we found the bank flat off regularly to sea-ward; and indeed its limits to the southward can only be known by the change of ground, from soft mud to a mixture of coarse sand and mud, with rotten stones, and broken shells.

The land of Point Palmiras is covered with palmira-trees, from which, I believe, it got the name: it is much indented about the point, there being the mouth of a river, at a small distance, on each side of it; that to the southward is a pretty large inlet, and must be navigable for small vessels, as the Paddy-boats which passed between the point and the island went into it. From this inlet the course of the shore is S. W. for 3 leagues, and then makes an elbow, falling off W. S. W. for 10 miles farther; which brings us to the bottom of False Bay; here it turns short round to South, and S. by E. for 7 miles, to the

False Point of Palmiras. There are two rivers' mouths just to the northward of this point, which are some of the outlets of the river Gonga, that runs through almost the whole Maharattas country, and has the large town of Cuttack situated upon an island in it: but the principal outlet of this river is 17 miles N. E. of the Black Pagoda, at an elbow of the land; and there is a hard flat, extending a considerable way to sea-ward from it, occasioned by land thrown out of the river. All over False Bay, the bottom is exceeding soft; the lead buries in it, and brings up a greenish mud. There is a dry bank which runs off False Point, nearly in the form of a horseshoe; it turns short round into the bay, and has some shrubs growing upon it. There is water within of it, but I cannot say of what depth, as this place has never been carefully examined; but, if there be sufficient depth of water, it is an excellent harbour for small vessels.

Before we quit Point Palmiras, it may be useful to remark, that, if a Light-house were erected upon the island*, it would be of the greatest use to shipping, in their coming round the bank, to enter the Bay or Road of Ballafore: and in strong south-westerly gales, when there is no certainty of meeting with a pilot in the roads, and it is dangerous to trust to a ship's ground-tackle, they could haul close round the bank, and bringing the Light-house to windward, might anchor, and ride in smooth water, in a depth of about 10 fathoms, until the gale abated. This scheme is very practicable, and nothing can hinder ships from practising it, but the uncertainty of knowing the situation of the bank; which the erecting a light-house would entirely remove, if proper directions were given concerning it. The expence of building would not be great, if, as I conceive, the bricks could be made, and lime burnt, at the point; for it is not to be doubted but there is earth, and shells enough, fit for the purpose; and a trifle of money imposed upon shipping, would soon reimburse the expence. I shall only observe farther, that a light at this place ought not to be less than 100 feet above the surface of the water: it would then be seen from a ship's deck, where the eye was 16 feet above the surface of the water, at above 5 leagues distance; and this far exceeds the extent of the bank in any direction: indeed it would be seen from a large ship's mast-head, shortly after she came past the False Point.

" The course of the shore, from Palmira Point to Churinga River, is N. N. W. and the distance 25 miles. Kannaka River is about 2 leagues within the point, and the flat along shore to the northward of this river has been already mentioned. The BIGHT OR BAY OF CHURINGA has commonly been called *Kannaka Bay*: it is a good road for vessels in the S. W. Monsoon; but there is not more than 3 fathoms water, a league from the land: besides, it is quite out of the track of ships bound into Hughly or Hoogly River; and this is one good reason for recommending the anchorage under Palmira Island. About Churinga Creek the land bends round to the eastward; for

* See what Captain *Lefley* has said on this subject, p. 278.

the course of the shore, from thence to Bulramgurry, at the entrance of Ballasore river, is N. E. by N. distance 27 miles. This part of the coast is very flat, there being little more than 2½ fathoms, above a league from the land; and in some places, the banks dry at low water, half a mile from the shore.

“ From Ballasore river, to the east edge of the Eastern Brace, the course of the shore is N. 76° E. and the distance 76 miles; that is to say, from Ballasore river to Pepley river 19 miles; from Pepley to Beercool creek, 17; and from Beercool creek, to the east edge of the Brace, 19 miles. The whole of this last distance has a much bolder shore than the Bay of Churinga; there being 3 fathoms at a small distance from the land, except where it is interrupted by the flat of Pepley and a small sand which lies along shore at the head of the Brace.

“ When a ship has made the pagodas upon the Coast of Orissa, and is in depth of water from 15 to 17 fathoms, it must be observed that the course along shore to the False Point, is N. 55° E. and the distance 17 leagues; I mean from the Black Pagoda: and it must not be forgot, that between 5 and 6 leagues, to the eastward of it, is the flat occasioned by the outlet of the River Gonga, which has been mentioned already. The water will be shoaler upon it, in the track here proposed, and the ground hard; but there is no danger, but that of mistaking the elbow of the land, at this place, for False Point; which can never happen, if any attention is paid to the distance before mentioned. There have, however, several mistakes of this kind been committed, by reason of the hollow, or bight, in the shore between this place and False Point, being mistaken for False Bay.

“ When False Point bears W. N. W. which will happen at the above distance from the Black Pagoda, the course to clear Palmira bank is N. E. and the distance 31 miles. This will bring Point Palmiras to bear W. N. W. after which, the course should be N. by E. until the water deepens; for this track, you should keep 15 or 16 fathoms in rounding Palmira bank; and soon afterwards, 18, 20, and 22 fathoms. To prevent any mistake here, I must observe, that the above is just the course and distance which the land and banks require, without any regard to the tides: but navigators must give attention to the ebbs and floods here; for the latter presses strongly upon the land, every where to the northward of False Point, occasioned by the indraught of the rivers and creeks, together with the natural flowing into the Bay of Churinga; and the former has just a contrary effect: so that the apparent course steered from False Point, to round the Bank of Palmiras, will sometimes be E. N. E. and at others N. E. by N. will be sufficient. The guide to order this matter at present is, not to increase the depth of water too much, until round the bank; but if a light-house were erected, as I have mentioned, ships could then come round the bank, with an absolute certainty of their situation, by night or by day; and without danger of being driven off upon the Sea-reefs, as has been too often the case.

" If there were no tides to affect a ship's motion, and it were wanted to steer directly from the above situation at Point Palmiras, to the edge of the Western Brace, at the usual crossing track, the course would be N. 40° E. and distance 52 miles; for such is the situation of these places, with respect to each other: but, as the pilot-vessels generally ride in about 17 fathoms water in the southern Monsoon, and in about 11 fathoms in the northern, it is therefore necessary, when round the Bank of Palmiras, to steer N. W. or N. N. W. to the Road of Ballasore, in order to get a pilot for the river, and in this case too, the course must be regulated by the tides, if there be no pilot-vessels in the roads.

" A ship should never go into less than 15 fathoms water, during the southern Monsoon; nor into less than 9 fathoms, in the northern: for if there be no pilot-vessels in sight, in these depths she has nothing to depend upon but anchors and cables: I must therefore leave her, and see what is in the way before she gets into Hughly river; only it may be necessary first to remark, that all the bay generally called Ballasore road, is very good anchoring ground; and the depth may be any thing less than 20 fathoms, according as ships go far into it: in short, the depth at low water is nearly equal to the distance from the land, in miles, until we are very near the shore; where, in Churinga Bay, the depth is less, and to the eastward of Ballasore it is more.

" There is a patch of broken ground, off the Bay of Churinga; it lies in about 11 fathoms water, which may be seen discoloured upon it. I have heard people mention several patches of this kind, to be found in the bay; but I could never find any other than this; and am apt to believe, that all have seen the same patch, but have mistaken the situation of their ships.

" Directly South from Pepley river, lies the FLAT OF PEPLY, as it is called, extending about 3 leagues from the land, and is a league broad, or more: the whole of it is hard ground, but at the south end there is little less water upon it than there is upon the soft ground on each side: the shoalest part is between 3 and 4 miles from the shore, where there is not quite a fathom at low water; this part is detached from the shore by a small channel, through which the country pilots of Ballasore often conduct small vessels, in the coasting way, to Hidgellee, commonly called Ingellee Road.

" THE BRACES are two hard flats lying to the southward of the Beercool shore, and extending a great way to sea-ward: they are detached from the land by a very tolerable channel, of 3 fathoms water, or more; and they separate Ballasore road from the entrance of Hughly river.

" THE WESTERN BRACE is 5 miles broad at the north end, where it begins, about 2 miles from the land: it lies N. by E. and S. by W. being 7 leagues long; but, from the middle to the south end, it is little more than 2 miles broad: in the depth of 10 fathoms it loses itself insensibly; and in the latitude $21^{\circ} 20'$ North, a part of it is to be found. The depth at low water, upon this Brace, is at the north end, 2 fathoms; at the crossing

track,

track, 3 fathoms, on common tides; and from thence to the southward it gradually increases to 8 fathoms; after which there is no more hard ground.

" THE KELL is a swatch of soft ground between the Braces, which entirely separates them: it is 4 miles broad, and from it there is a passage for ships of moderate burthen, between the head of the Eastern Brace and the land to Ingellee. In the crossing track of ships, there is 7 fathoms water, at the east side; there is 6 at the west side; and, indeed, no where in the Kell is there less than 5 fathoms at low water.

" THE EASTERN BRACE is 4 miles broad from the north end down to the crossing track; and from thence to the south end, it tapers away to a point, and bends round in a circle to S. E. The whole length of this Brace is 12 leagues; and the hard ground at the southern extremity of it, is called the EASTERN SEA REEF: on the north end of the Brace, there is something less than 1 fathom, at low water; and the depth increases gradually to the southward; there being 2 fathoms on the crossing track, and from 3 to $3\frac{1}{2}$ at the southern extremity of it: this must be understood of the lowest spring tides.

" The depth of water at the eastern part of the Kell will always point out the depth upon the Eastern Brace, there being just 5 fathoms difference, at the crossing track of ships; so that, when there is 9 fathoms in the Kell, there is full 4 fathoms on the Eastern Brace, and about 5 on the Western. As I have frequently mentioned the CROSSING TRACK, it may be necessary to observe, that it means a space athwart the Brace, about 2 miles broad, in the direction E. by N. and between the latitudes $21^{\circ} 21'$ and $21^{\circ} 23'$ North: how it is found in coming from Ballasore Road, I shall have occasion to shew afterwards; and shall now proceed to give an account of the sands and channels at the entrance of Hughly river.

" BARRABULLA is a sand which forms the west side of the fair way; I mean the LITTLE FAIR WAY here, or common track. It begins about 3 leagues S. by W. from the pagoda of Ingellee, and extends S. S. W. about 10 miles: the north end is called the *Head*, and the south end the *Tail*, of the Barrabulla; the first is very shoal, having only $\frac{1}{2}$ a fathom, or so, at low water; it is very dangerous, there being 5 fathoms in the Fair way, close by it. The tail of this sand has not much less water upon it than there is in the Fair way; only it is broken ground, and over falls of about $\frac{1}{2}$ a fathom every cast of the lead.

" LONG-SAND begins at Kedgerie Point, and extends to the southward, to latitude $21^{\circ} 18'$ North, which is 2 leagues to the southward of where the buoy of the fair way is usually laid: it is, in all, 35 miles long; its width is various, but generally it is narrow, having many patches, which dry at low water: the directions which it lies in are S. by W. and N. by E. At the south end it opens to a broad flat, having a greater depth of water upon it than the Eastern Brace has, in the same latitude. It must be observed, that the passages, called *Cockerlees*, are no other than swatches through the Long

Sand. Of these there are Three; one just by Kidgerree Point, (*used at this present time, 1775*); another between 4 and 5 miles more southerly, (*which is the old passage*); and the third is directly East from where the buoy of Ingellee is usually laid. This last is not known to the pilots.

" FAIR WAY is a track or passage, between the Long-Sand and Barrabulla, lying nearly N. N. E. and S. S. W. the upper part of it, or that between Barrabulla head, and Ingellee road, is called Broken Ground, on account of the uneven bottom in that space. The buoy is laid down in this track, for conducting ships through it. There are, first, the *Buoy of Ingellee*; this is laid 4 miles directly South from the pagoda of that place: secondly, the *Buoy of the Broken Ground*; this lies S. W. or thereabout, from the buoy of Ingellee; and this distance is between a league and 4 miles S. by W. A large league from *this*, lies the *Buoy of Barrabulla Head*; it is placed close to the east side of the sand of that name, in not less than 5 fathoms at low water: indeed there is here the deepest water of the whole Fair way. The *lower Buoy of Barrabulla* is 10 miles distant from that of Barrabulla head, bearing S. by W. $\frac{1}{2}$ W. nearest; and when there is a middle buoy, it should lie in the same line, and half way between them. The last buoy is called that of *the Fair Way*; it is generally placed S. W. by S. from the lower buoy of Barrabulla, and between 4 and 5 miles distant from it: but this is not always certain; for I have seen it lying so much to the eastward, as to be in less than 3 fathoms, at low water, upon the hard ground of the Eastern Brace; and in that situation it could be seen from a small vessel's mast-head, in the Kell. The Fair way soundings are, in general, $4\frac{1}{2}$ fathoms at low water, common tides; except at the Broken Ground, where there is little more than 3: but the east side of this part is deepest. I shall just remark, that the Fair way Buoy should be in the latitude $21^{\circ} 25'$, or between it and $26'$ North, and must quit this matter, by observing, that there is a very good passage, between the Western Brace and Barrabulla, for vessels of moderate burthen.

" GASPER SAND is the greatest of all those in the Hugly entrance: it begins a little to the south-westward of Mud Point, in latitude $21^{\circ} 57'$ North, and goes S. by W. 20 miles, where it bends round near Sagor island, south-eastward, and extends as far as the latitude 21° North. The north end of this sand is called THE MIZEN: it is very broad, and fills up the whole entrance, leaving only a channel on each side; of which, one is the Road of Kidgerree, where the ships now ride (1775). The middle part is called Gasper, which, to the northward of Sagor, is narrow, and to the southward, broad: the south end is called the EASTERN SEA-REEF: but the whole Mizen, Gasper, and Sea-Reef, is one continued sand, with various depths of water upon it; and many patches, which dry at low water. This sand is detached from the eastern shore, and Sagor island, by a very good channel; only it is somewhat narrow at the north end, which, together with

with the tides, would make the pilotage, going down, very difficult just at the Mizern head.

" SAGOR or *Sauger* Island is the east point of the great entrance of Hughly river; I say *great*, to distinguish it from Channel creek, which is the little entrance: it is situated between the latitudes $21^{\circ} 34'$ and $21^{\circ} 41'$ North, lying N. N. W. and S. S. E. being in length 8 miles, and about half as broad: it is detached from the land by a creek, the north end of which dries at low water: and what is remarkable of this place, is, that there is here the greatest rise and fall of tides, of any place about the head of the Bay; for, on spring-tides, the water rises and falls 4 fathoms.

" Upon the east side of Sagor island, is a pagoda, and a large tank of fresh water; it is a place of worship, to which numbers of the Hindoos resort once a year; and the Bramins subsist upon the presents given them of grain, roots, and dried fruit. The Bramins call the Island Gongo-sagor; but the natives, in general, understand Gongo-sagor to be the whole land which separates Channel creek from the western branch of Hughly river; except the little island Coxes, which lies to the northward of Sagor island; and is no more than a league in length, and 2 miles broad.

" The country name of CHANNEL CREEK, is *Barratulla*; and its course is S. by E. 30 miles; there are some very quick turnings in it, near the north end, which makes the channel difficult; otherwise it would be an excellent passage for ships: but, at any rate, the north end of it is much the best place about Hughly entrance, to moor ships in, during the S. W. Monsoon; and might be occupied that way, with very little trouble. Upon the east side of this creek, in latitude $21^{\circ} 45'$ North, is the creek Dooagra, which gives a passage into the *Sundrybunds*, or *Sunderbunds*. The whole land upon the Coast of Bengal has this name, from a kind of timber, called by the natives, *Sundry*; although there are many other kinds produced there; for the whole woods are called by this name. The channel into Barratulla, at its mouth, is close to the eastern land; it is narrow and deep, and from thence to sea-ward, a ship might steer S. E. by S. without fear. The bottom here is soft black mud, with stars, or shining spots.

" The channel, to sea-ward, from Barratulla, is detached from those to the westward, by a flat, generally called SAGOR SAND: it is as hard as a terrace, and extends to the southward, as far as the latitude $21^{\circ} 10'$. Near the land there are many patches, which dry at low water; and, for a long way to the southward, there is not more than 6 feet water upon it. Vessels going out of Channel creek must be aware of this; for the last of the ebb, and first of the flood tides, set strong to the westward here. If, in any time coming, there should be a necessity of making Channel creek the passage for ships into Hughly river, it would be necessary to erect a light-house upon the east point of the entrance: this would be an excellent guide, both going out and coming in.

" SUBTERMOOKY is the next river East of Barratulla; it is a considerable river, and has within its mouth an island, called Coja Deep. By the creek Dooagra, it has a communication

munication with Barratulla, and one reach farther up, it divides into branches, of which the eastern one is part of the lower passage through the woods, and is called *Nauksberab*. There is a good depth of water in the channel of the lower part of this river, and excellent anchorage for ships, in the southern monsoon: but it is most remarkable for having the little island, Coja deep, near its mouth, between which and the land is the best harbour upon the Coast of Bengal.

" COJA DEEP * lies in the latitude $21^{\circ} 28'$ North, 18 miles to the eastward of Sagor; it is about 4 miles from the shore, and its extent is scarcely a mile over, either way: there is, however, a charcoal manufactory upon it; N. N. W. from this island is the entrance of *Subtermooky*; and N. N. E. is that of *Jummerab*, the next river between the island and the land which separates these rivers: there is no where less than 5 fathoms water; and near the channels of the river, 6, 7, or 8 fathoms; it is, therefore, a very good anchorage for ships, when compared with any other place upon this coast. The island breaks the great swell from the southward, and the flats and sands do the same from the eastward, or westward. The best channel, leading to this place, and consequently to both the rivers within it, runs close by the west side of Coja deep: it is there 2 miles broad, and has a depth of 10 fathoms at the island: to seaward it decreases gradually to 4, and $3\frac{1}{2}$ fathoms, which is the least. The channel lies North and South, and is bounded to the westward by a flat, which separates it from the channel of Barrabulla; and to the eastward, by another which stretches off to the south-eastward of Coja-deep. There is a sand upon the western flat, a little to the northward of the island, which dries at low water: and at other times of tide the sea breaks very high over it, in strong southerly gales. I need only say farther, that, if a ship brings the island to bear north-eastwardly a little, and steers directly in, clear of the west side of the island, she cannot miss the channel. This would be a place of great importance, were it a little more conveniently situated for Calcutta.

" When we go up JUMMERAH RIVER about 9 leagues, we find its name changed to *Nullaah*; upon the banks of which, and in the creeks about it, are the great salt *Tuffels*, of the same name: these, we are told, were formerly employed for the benefit of the Nabob's household. The country to the N. W. here, had once been well cultivated, but is now totally deserted. There is an old Hindoo pagoda upon a creek at the west side of this river: it is about 60 feet high. The jungle is very close and thick about the pagoda, which stands in latitude 22° North, 20 miles East from the north end of Channel creek. It is a few miles to the southward of this that the creek Juggy Jaffah gives a passage through to the Muttwall, and has salt-works upon its banks on both sides.

" ROY-MATTLAH, or *Muttwall*, is the next river eastward, the channel of which is to sea, close to the eastern point of the entrance; it is 32 miles to the eastward of Sagor,

* *Deep, Dip, Dib, Div, or Diva*, an island, in the Indian language.

and is separated from the channel of Jummerah by a shoal broken flat. There is a creek which cuts off the point of land between these rivers, into an island which the country people call Bulcherry; and upon the eastern part of this, there are several pits dug for fresh water; and a little to the N. E. of the Island are the mouths of two creeks. I must observe, that there is no mark to know one part of the land from another, along this coast. The whole is low, and covered thick with trees: and wherever the meridian distance from Point Palmiras, or from Sagor, can be tolerably ascertained, no great mistake need be made. The lower part of Muttwall is very large, being above a league broad; and between the latitudes $21^{\circ} 47'$ and 22° North, it forms several islands, and divides into two branches, of which that to the westward is called Bogybogie; and it has this name as far to the northward as the latitude $22^{\circ} 20'$, where it again separates into three branches, the westernmost of which leads directly into the salt lake of Calcutta; and until it is close to the lake, there is no where less than 3 fathoms water, and in many places much more; so that a ship of considerable burthen might come into the Muttwall, and having only a boat to sound before her, proceed directly up to Taida, a village just beyond the lake. The eastern branch of Muttwall retains its own name, but it runs no great way up; for, by dividing into many little branches, it may be said to lose itself in the woods. The southern extremity of the land, to the eastward of Muttwall, is in latitude $21^{\circ} 29'$ North; and the bank to the southward of this, is very shoal for a long way to seaward. The channel at the river's mouth is large, and fair, lying N. by W. and S. by E. About 10 miles from the land, the depth is 3 fathoms at low water, and gradually increases to 9 or 10 fathoms at the entrance.

" Every seaman who may by accident be driven, or who may have business upon the coast at the end of Bengal bay, ought to observe what I am just about to remark.

" Conceive the whole of this coast, when it is first seen from a ship at sea, to have the appearance of a range of low islands covered with trees; and that the ground between the ship and them is a sloping bank, with very little water in it, near the land. Conceive the bank to be cut through by a channel from between each island; that these channels are variously situated, and have a different course; but that these are all soft ground, with an increasing depth of water towards the land. When the coast can be seen from the deck, the depth of water is in general about 3 fathoms; and very few places have much more or less; I mean, at low water. The bottom, at this distance off, is stiff ground. If a ship, as she draws nearer the land, be in a channel, the ground will soon become quite soft, and the depth increase; but if she be not in a channel, the ground will suddenly be found hard as a terrace, and the depth will decrease: if this last be the case, there is an immediate necessity of standing athwart to the eastward, or westward, as the wind will best permit, until the ground softens; and
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there is no doubt but the depth will increase at the same time. Whenever the ground is found to be quite soft, a ship should bear up for the opening without fear; and as she goes in, it will soon be perceived, that what appeared to be an opening between islands, is in reality the entrance of a river: and, except about Sun deep, this will be the case all over the head of the bay. I am here supposing the case of a ship being driven upon this coast by a southerly tempest. It was a misfortune of this kind which occasioned the coast to be surveyed; and it is with intent to render the survey as useful as possible, that I am so particular in describing the various situations of the channels with respect to the land and the directions which they take upon the bank; and if ever it happens to contribute to the safety of ships, or men, my labour will not be lost.

" It is from the salt-works that those who may be driven upon this coast in tempestuous weather, are to expect the earliest relief, either of boats, or of men, to pilot them to the inhabited country. The people employed upon this business, have the general name of *Mollingabo*: they are a quiet, harmless cast of men; and not a little obliging, when not ill treated, or frightened by the rough manners of European seamen. A small supply of fresh water may be had of them, and a little rice; that being the only provision these people have: it is true that sometimes a few fowls may be had, but rather unwillingly, because they are brought as a present, or rather sacrifice, to *Gaugie Sabib* (the god of the woods), for protecting them from tigers and wild beasts. It is by this means, that we every where in the woods hear crowing of cocks, whether there be people near the place or not; for these birds stray away from the Salt Churrs, and at last become quite wild, and sometimes fly over the rivers. I mention this, to prevent those who may be unacquainted, from going into the woods, in search of people, when they hear cocks crowing. One caution is very necessary, which is to beware of going ashore at Salt Churrs in the night; for both the royal tiger and leopard are always waiting about these places, and often cover all the ground over at night, as may be seen by the prints of their feet.

" BANGADOONY is the next river to the eastward of the Muttwall; it is but small, being only a collection of the water of several creeks or drains from the jungles: there is however tolerable deep water at its mouth; and the course of the channel to seaward is S. S. E. The river has its name from an island which separates its entrance from Gooa-suba river. A vessel of tolerable burthen may pass to the northward of Bangadoony island; and between this and a small island which lies in the passage, a ship might moor safe from every wind. There were formerly salt-works at this place; but they have not been occupied of late years.

" GOOA-SUBA comes next: it is a tolerable large river, but the most difficult to enter of any upon the coast. The channel at its mouth takes over to the eastern land, and then bends round in a circle to South: therefore whoever would go in here, must

bring the middle of the land East of the river to bear North, and steer directly in for it, until pretty close to the shore; after which stand over to the eastward, close to Bangadoony island; and then the channel leads fair up the river. The first reach of Gooa-suba goes up about N. W. at the end of which there is, upon the eastern shore, a creek, with very considerable salt-works upon its banks. Beyond this creek, the course of the river is North a considerable way: it then turns short round to W. S. W. and afterwards N. N. E. The point of this last short bending is cut off by a creek, which makes it an island. About the latitude $21^{\circ} 58'$ North, in this river, we again come to the Sunderbund passage: this is at a very short turning of the river from N. W. to East southerly; and the point is remarkable by being cut off into a small round island. There are two creeks in the western bight, which lead through to the Muttwall river; but the northern one is much the best, and is called *Tera banka* (13 reaches). From this creek, if we would go to the eastward, the passage is one reach farther up Gooa-suba, where we come to the creek *Noa banka* (9 reaches) which leads through to *Harribanga*, the next river eastward. It may seem trifling to be so particular about the creeks which give passage to boats through the woods: but I must observe, that in cases of shipwreck upon the coast, strangers here would never of themselves get out of the Sunderbunds, supposing they had saved their lives in a boat.

"We come now to the east side of the entrance, at which is the great channel for the united waters of Roymungul and Jebboonah. The point of land is in latitude $21^{\circ} 37'$ North; and by it the depth in the channel is 10 fathoms; and within the mouth, 12 or 14 fathoms: out to sea-ward, the depth lessens gradually to 4 fathoms. The next entrance is one of the most important upon the coast of Bengal, whether we consider it as a place where ships might find shelter in a storm, or as an inlet to an enemy. It is called ROYMUNGUL ENTRANCE, from the river of that name; but there are two other rivers, which discharge their waters by it: that to the westward is Harribanga, and the eastern one is Jebboonah. Harribanga is separated from Roymungul by a tongue of land about 4 miles within the entrance."

The Editor laments that it is not in his power to continue this interesting description of Mr. *Ritchie* beyond Roymungul, and that he is obliged to proceed from hence abruptly to the Coast of Chittagong.

P A R T II.

DIRECTIONS FOR SAILING FROM THE ARRACAN SHORE,
ALONG THE COAST OF CHITTIGONG, OR CHITTAGONG.

By Captain JOHN RITCHIE.

* **B**ETWEEN the latitudes of $21^{\circ} 10'$ and $21^{\circ} 24'$ are situated the WHITE CLIFFS OF ARRACAN: they are separated from the Chittigong coast by the opening of Sangrial, or Cruzcool. In the offing near the White cliffs there is good anchoring ground; it being stiff a little below the surface, and soft on the top; the depths gradually decreasing from 20 fathoms at 11 leagues off shore, to 5 fathoms close in: so that a vessel with good ground-tackle, may ride a strong gale out. The latitude of 21° , and between that and the White cliffs, is the best landfall on this part of the coast for vessels that are driven to the eastward, by stress of weather, or other accidents, it being perfectly clear of shoals, and steep-to. After making the land it is necessary to haul off to the westward, to avoid the BANKS OF KUTTUPDEAH and MASCALL, which extend to the southward as far as $21^{\circ} 23'$, and off shore 9 or 10 miles in some places; some of them being detached from the shore, and having wide and deep channels within; which channels, however, it would not be prudent to attempt, for want of proper marks. The outermost bank is steep-to on all sides, and has from 15 to 20 fathoms close to it, and only 6 or 8 feet on it at low water. There is also a strong indraught of the flood-tide towards the opening of Cruzcool, and the creeks between the Mascall Islands; which makes it still more necessary to keep a good offing after having made the White cliffs.

" Should it happen, that by means of hazy weather, or other accidents, a ship should be close in with the White cliffs, before discovering them, and the wind too far westerly to clear the shoals, and too strong to attempt riding it out, a place of shelter may be found, by sailing within the western shoal, or even within Kuttupdeah, if necessary, by attending to the following directions. The REEF OF CRUZCOOL extends from the point of Cruzcool to about 7 or 8 miles W. N. W. On the western part of this reef, is a small sandy island, called *Red-crab Island*, (in latitude $22^{\circ} 28'$ North) it being about 2 miles S. S. W. from the south point of the Mascall islands. Leave Red-crab island a league to the eastward, and from this station, which will be in about 8 fathoms, steer N. by W. in 10 to 15 fathoms, till the passage between Kuttupdeah and Mascall is quite open; then steer on the direction of the opening (which will be about N. E. by N. in 7

to 10 fathoms water): and having got within the point of Kuttupdeah, you may anchor securely in 10 fathoms, soft ground.—Note, That a spit extends off the point of Kuttupdeah upwards of 2 miles, S. W. by S. and that a bank projects from the Mascall shore, to the distance of $1\frac{1}{4}$ mile. Both of these will be avoided by keeping the aforesaid passage quite open. It would be improper, and indeed unnecessary, to run a mile within the point of Kuttupdeah, by reason of a bank that projects from it to more than half way across the channel, at 2 miles within the entrance.

“ If the wind is fair, after making the White cliffs, and the ship bound to Chittigong, a north course from 18 fathoms (when abreast of the cliffs in latitude $21^{\circ} 10'$) will carry the ship 4 miles clear of all the shoals, passing them in 10 and 12 fathoms, with an offing of 4 to $4\frac{1}{2}$ leagues from the Mascall islands. When the south end of Kuttupdeah bears W. by N. you are past the north end of the outer shoal, and may haul in more towards the shore, keeping in 9 or 10 fathoms, with an offing of full 2 leagues from Kuttupdeah. When past Kuttupdeah, haul still more in towards the shore, till you get in 6 fathoms, at a league off shore, and coast along at that distance, till you discover the mouth of Chittigong river. The distance from Kuttupdeah to the river's mouth is about 6 leagues; the course N. $\frac{1}{4}$ W. The coast between these two places is low and flat near the sea, but hilly 2 leagues in. Seven miles to the southward of Chittigong river, is the *Sunkar River*, or *Angbor-Colley*: this having a large opening, may at first be mistaken for Chittigong river.

“ If the weather is clear, it is not easy to miss the mouth of CHITTIGONG RIVER, which lies in latitude $22^{\circ} 13'$ North. The chain of hills above mentioned between Kuttupdeah and the river, situated at 6 miles in land, ends in a point about 3 miles South of the parallel of the river's mouth. Four or 5 miles N. W. from the end of this chain of hills, are two small detached clusters of hills, within 3 miles of the shore, the northernmost of which lies close behind the Bunder, or anchoring-place, in the river. Should the weather be hazy, there may yet be seen a tall flag-staff, and a remarkable tree, both close to the shore. The flag-staff stands $1\frac{1}{4}$ mile to the southward of Noman's (or Norman's) Point, which is the south point of the entrance of the river: the tree, which is thick and bushy, and called the Fakeers tree, stands 3 miles South of Noman's point, and 4 miles North of the Sunkar river.

“ In very clear weather the hill called Shahbroage, with two round trees and a flag-staff on it, will be seen when a-breast of the Fakeers tree, bearing N. $\frac{1}{4}$ E. distant 10 or 11 miles. This hill terminates on the South a chain of low hills, that run parallel to the Chittigong coast, and in which the Seetacoon hill is the highest, and most remarkable.

“ Those that wait for a pilot for Chittigong river, should anchor abreast of the Fakeer's tree, from whence a gun may be heard at ISLAMABAD. The proper depth for anchoring is in 6 fathoms, at $1\frac{1}{4}$ mile from the shore. The bottom here, as well as all along the

coast from Kutturpeah, is stiff, and excellent for holding; but in strong gales the sea runs very short, and commonly breaks all over a small vessel.

"I would not by any means advise a person to attempt entering the river without a pilot; but should necessity oblige them to push for it, I refer them to the directions given at the end.

"If the ship draws too much water for the bar, and a scarcity or badness of ground tackle renders dangerous any attempt to ride out the strong gales that blow on the shore, at certain seasons, she may bear away for BOMINY HARBOUR; which is a place of shelter, formed by the islands of Bominy and Sundee, and the main land. This harbour lies about $12\frac{1}{2}$ leagues to the northward of Chittigong river; and, in order to reach it, you must coast along the shore, keeping in 6 fathoms, at less than 2 miles off shore: the course is from N. by W. $\frac{1}{2}$ W. to N. W. by W. the land embaying. When you begin to open the passage between Sundee and Bominy, haul closer in with the main land, so that by the time you have brought the north end of Sundee to bear West (or Seetacoon hill nearly East) you may be within a mile of the shore. Coast along, at that distance, keeping in 7 and 8 fathoms water, to avoid a reef that projects near 5 miles from the south-east end of Bominy. After having run about 8 miles in this manner, you will open the east point of the Fenny river, distant 8 miles, which was before shut up in the low round point that forms the eastern entrance of Bominy harbour; you must now haul over towards Bominy island, and being got in 5 fathoms (at low water) within $1\frac{1}{2}$ mile of the shore, may anchor securely. When at anchor, the south-east point of Bominy will be very little open with the north-east point of Sundee; and Seetacoon hill (which has a small pagoda on the top of it) will bear E. S. E. the latitude is $22^{\circ} 39'$ North. It is proper to anchor nearer to the island than the main, in order to avoid the stream of tide of the great Fenny; the flood of which comes in with great rapidity at springs, and causes a bore in the narrow parts of the river.

"It is high water in Bominy harbour at $2\frac{1}{2}$ hours, full and change.

"As the whole space between the meridians of Rabnabad Island, and the east end of Sundee has not been sounded farther South than about $21^{\circ} 30'$, it would be imprudent for ships to come to the northward of that parallel between these meridians. I have been informed by the Chittigong pilots that there are *Two banks* in latitude 22° , one of them $5\frac{1}{2}$, the other 9 leagues from the shore: the sea, in rough weather, breaks over both. Both on account of these banks, and of the unexplored track above mentioned, a ship leaving Chittigong road should run to the southward as far as $21^{\circ} 20'$ before she stands across the Bay.

"The south point of the entrance (called, as we have said, Norman's or Norman's Point) has a flat projecting from it to the S. W. but is steep towards the river, the channel of which runs close by the southern bank, and then out to sea in a south-west direction: therefore to enter Chittigong river, bring the steep or the north side of Norman's point to

the eastward of N. E. so as to open the bank of the river within it, and steer directly in N. E. and along the southern shore at 30 or 40 fathoms distance; and when past two little creeks in the Bunder green, drop an anchor under foot: for there is not room to throw a vessel to there, if it blows fresh, the channel being not above a cable's length over; and for this reason they must moor immediately. There is a clump of trees at the foot of Bunder hill, and close to the river: the anchoring-place is $\frac{1}{2}$ a mile below this clump, and opposite to it the channel of the river runs towards the opposite bank. From the anchoring-place, Shahbroage bears North.

"In the S. W. Monsoon the bar of the river looks frightful, as the sea breaks over it in most places; and on the north side of the entrance there is a cluster of sands, which dry at half-ebb. It is high water on the bar at one o'clock, full and change; and the best time to enter the river is at high water slack. The flood sweeps so rapidly athwart the entrance of the river, that it is dangerous to attempt going in while it is making, especially if the vessel steer the least wild. Next to high-water slack, the best time is when the ebb has begun to make; but then there is a risk of being driven on the flat of Noman's point. The best track over the bar has more than 4 fathoms at high water; and in drawing near the river bank, it deepens to 5, 6, and 7 fathoms."

SAILING DIRECTIONS FOR THE COAST OF CHITTAGONG,

By Mr. BARTHOLOMEW PLAISTED,

MARINE SURVEYOR TO THE EAST-INDIA COMPANY.

"ALL ships in the S. W. Monsoon, coming from the sea, ought to make the coast to the southward of Red-crab island about the latitude of $21^{\circ} 15'$ or $21^{\circ} 20'$ North; but nothing farther to the northward. This I recommend on two accounts: first, it appears to me to be a bold shore, clear of any shoals, for any thing I have observed, and gradual soundings to 3 fathoms at the distance of $\frac{1}{2}$ a mile from the shore; secondly, close to the beach is a range of rocks and sandy cliffs*, that make it very remarkable, but more especially when the sun is to the westward, when they will appear very white; but, in the morning, the shade gives them a different complexion; and in the country is high land, and a remarkable hill, like a sugar-loaf. Add to this,

* Between the third and fourth of the Sandy cliffs, counting from the northward, is a small run of fresh water. A hint of this kind may be deemed necessary, as ships have been three months in their passage from Madras to the Bay; and this eastern shore is the proper track.

that:

that in the months of June, July, August, and September, the continual rains for days together, make observations of the latitude more rare, and the danger greater of falling in with the coast, which is then a lee shore. There will be less risk in falling in here, than farther to the northward; but if a ship has already got soundings to the northward, and wants to bear away for Chittagong, there is no necessity to run to the southward, in the months of October and November, but endeavour to make the land between Norman's point and Anghor-colley.

" All vessels from Bengal should follow these rules if possible; but if driven to the southward, they must work along shore for the benefit of the floods.

" Coasting this shore in 7 fathoms, to the northward of the cliffs appears a large bay, which is called CRUZCOOL; and there is a considerable river which falls into it, named Mush-colley. I took extraordinary pains in examining this place, in hopes of finding a harbour; but at last must conclude there is no entrance for any vessel of burthen. The soundings I found here, and the chain of breakers that enclose it, make me apt to think that none would venture in, even should a channel hereafter be found amongst them; for the long-boats, on the survey, were obliged to go in, to the northward of Red-crab island.

" Before the northernmost of the cliffs is about E. by N. from the mast-head, you ought to look out well for Red-crab island, and the breakers off it, which are easily perceived in day-light, and consequently avoided; but the soundings about them are so irregular, that in the night it is better to keep out into 15 fathoms, and on any sudden shoaling stand off again; for here are 5 and 6 fathoms almost close to the breakers.

" RED-CRAB ISLAND is easily known, by its bearing from Cruzcool, and it being a white sand, with a few green shrubs on it.

" Being past Red-crab island, it behoves you to keep a look out for A VERY DANGEROUS SHOAL, which, at high water and little wind, may not be perceived otherwise than by the lead. Its situation with the south end of Kuttubdea and Curria rivers I have carefully laid down, and they are the chief marks by which to avoid it: the soundings about it in the Draught shew what depth of water there is near it; but the above bearings may be relied on.

" From hence to the northward, there appears to be no danger along Kuttubdea, provided you keep about 4 or 5 miles off shore: nearer in there is a sand, and within it the depth is 7 fathoms.

" KUTTUBDEA is a woody island, having no people living on it, but a few fishermen: from Pilot-cotta to the south end, there is fresh water; and here are the most fishermen.

" The INNER PASSAGE, called by the natives *Uckoia*, is a very safe passage; but I believe, will be hardly ventured on by strangers, though I would undertake to carry the
biggest

biggest ship in the navy through: and, as it affords good shelter in the S. W. Monsoon, I shall give the best instructions my own experience has furnished, leaving others to make use of them as their own prudence may direct them.

" Red-crab island is the best to take your departure from; and coming from the sea, stand in between the shoal and the island, but nearest to Red-crab island, at the distance of about 2 miles, keeping a look-out for the point, a little above Curria river, which may be known by some trees resembling bamboo bushes: steer in for it, but do not approach the eastern shore too much, on account of the shoal that is off it. As soon as you perceive the south end of Kuttubdea, which is known by the same kind of trees exactly, keep it due North till you have the passage fairly open: then you may steer in without fear, taking care to keep two-thirds of the passage to the eastward; and thence forward range along Kuttubdea, in between 4 and 5 fathoms; and all along is good anchorage in soft ground, and no shoals: but to the opposite of Sunwa, and Urantania, the shoals run very far out, and without them deep water. There are Three Creeks on Kuttubdea; the first called

" *Kukera-banfera* (that is, a dog swimming) creek; small vessels, drawing not above 10 feet water, may find a safe harbour in it.

" The next creek, called *Pilot-cotta Creek*, (from a pilot murdered here by the Muggs) runs through the island, and has various soundings, from 1 to 7 fathoms, just within the eastern mouth. A ship may lie safe in 7 fathoms; and with the proper time of tide, a vessel drawing only 10 feet water may go quite through it. I had 5 feet on the bar at the western mouth.

" The other creek, to the northward of Pilot-cotta, is so inconsiderable that it is not worth further notice.

" Being past *Chutta-Sanway*, you may venture over to that shore, if you choose it; but mid-channel is now the best. At the upper end is a small river, not above a cable's length over, called Kentlaw, which about $\frac{1}{2}$ a mile in it divides itself: one part runs up to Julkuddar; and the other, called *KHAUT COLLEY* turning away to the N. W. comes out again to the sea. The first entrance at Kentlaw is a very safe harbour, but there is no entering at the other end. I worked through it hank for hank, with the two long boats, and did not find one shoal in it, the south-west side having generally 4 fathoms, the north-east shore 7 fathoms, and about a cable's length throughout. As a hundred ships may lie in it safely, it is necessary to say something more of a place that may be of more general use hereafter.

" At the mouth of Kentlaw is a shoal on each side, and at low water, both together, almost take up half the width; and yet at low water I would prefer to enter it, because they then discover themselves, and make the opening clear before your eyes. Having brought the river open N. E. by E. look out for the point, at the upper end, that divides the two rivers; and just keep it open, one third of the river, with

with the starboard side; and you may steer in without fear. Just in the middle between the two shoals is 9 and 10 fathoms, but being entered you have 6 fathoms: then haul up for the larboard shore directly. Afterwards you may anchor where you please; but the farther in is the safest in the S. W. Monsoon. Up at Julkuddar-kella is water: and the situation of this harbour is such, that it communicates with Choicoria and Ramoo without the boats going to sea, or entering Uckoia passage.

" Ships coming from the northward will, of consequence, enter the Uckoia passage to the northward; but the Serrole coast must not be approached too near, for it is shoal; and being turned Cuckold's point, after bringing it N. W. but not too much, they may venture to keep up the shore, close on board: they will have 7 fathoms. At low water, or half tide, the bank will guide them; but on spring-tides it is overflowed; and then it will be necessary to have a care lest you get on it.

" Ships likewise, who from the southward have gone without Kuttubdea, must be on their guard, and keep the lead going, for fear of this shoal, which bears from Cuckold's point W. N. W. $\frac{1}{2}$ W. While you are entering the north end of Uckoia passage, it is better to have a boat on each bow, till you have rounded the point, and brought it to bear N. W. and then there is nothing to fear.

" Having given the Serrole shore a proper birth, it is necessary to look out for the shoals of Angor or Anghor-colley, which are dry at low water, and no way dangerous, with your eyes open, and the lead kept going.

" From Anghor-colley to Norman's point there is no danger in the least, but regular soundings. Two miles to the northward of Anghor-colley, are some fishermen's huts, where those who are unacquainted with Chittagong river may get a pilot: but after all, it will not be prudent to let him bring you higher than the *Bunder*.

" Coming from the southward, Chittagong river may be easily known by the following marks.

" Between Kuttubdea and Anghor-colley is mostly woody. Being past Anghor-colley, between it and Norman's point, it is a white sandy soil, and few trees near the shore. Next, between Kuttubdea and Anghor-colley, guide your eyes along the coast, to the northward; and you will see on a hill, near Norman's point, but more inland, a remarkable spreading tree, which for that reason is called *Kittafol Tree*; at a distance you may see the tree as rising out of the water, before the hill is perceived.

" Another mark is, that at Norman's point the colours are hoisted, and may be seen with a glass 2 or 3 leagues off; but as this mark may be changed, or not hoisted, and the *Kittafol tree* is farther seen, the last is the most to be relied on.

" But as it may happen that a vessel may overshoot the river's mouth, and get up between Chittagong and Sundeep, it will be necessary to say something how to rectify such a mistake when committed.

First,

"First, If you are high up, a man from the main top may easily see Sundeeep, which alone may guide you, by referring to the Draught; and Satticone, (Sette-khone, or Settacoon,) in a clear day, may be seen as far to the southward as Anghor-colley; for it is the largest hill of all that range to the northward of Chittagong; and the whole range is continued to *Shaw-brush*, (Shahbrooge) in appearance. Having found out your error, you may venture to coast it, by your lead, back; only keep something farther off as you approach to the river's mouth; and being come opposite Kautwallea, which is known by a small point to the northward, look in for the range of hills inland, and you will see a hill, when in one with Kautwallea creek, bearing E. by S. on which is a tree, something like the Kittafol tree: and, not to confound things, we shall call this *Umbrella Tree*; to the southward of which you will see Shaw-brush, which appears to have 3 trees on it. The one really stands on another hill near it."

Instructions for Chittagong River.

"To enter the River of Chittagong, being out in the offing, keep Kittafol Tree by Norman's Point, E. by N. $\frac{1}{2}$ N. and steer right in for it, taking care that the flood does not hoist you to the northward, which the bearings of the above tree will inform you of. Being come near Norman's point, give it a small birth; and when you have entered in and come up with the high banks (for Norman's point is a low beach), you have nothing to fear, for you will have deep water all along the starboard shore, within two thirds of a cable's length; and by this you will avoid the *Middle Ground*: but be sure you anchor before you come to the *Kella*, $\frac{1}{2}$ a mile short, if you intend to go no higher; for to go higher requires some further consideration.

"If I was to carry a ship, in the S. W. Monsoon, I should hardly venture to cross with a flood tide, but would rather choose the latter part of the ebb, taking care to have enough of it till over; for till you are arrived over, and shut in the other part, a S. W. or W. S. W. wind, with a flood tide, must naturally horse you on the sand to the northward of the channel, or crossing place, it becomes then necessary to keep the north point of the *Middle ground* as close on board as the depth your ship draws will admit: and if you were to range the *Middle ground*, which has regular soundings, instead of keeping the shore so close on board, it will be still better, as you will have the less distance to cross over, and you may depend on 9 fathoms in crossing: if you have a less cast, it will be by bordering too near the north point of the *Middle ground*. Having got over to the other side, keep it close on board, never venturing above half a cable's length off: and you will have 6, 7, and 8 fathoms, till you are up with the *First creek*: afterwards you are to expect no more than 3, with a flowing tide. Being come up with *Konshagar*, $\frac{1}{2}$ a mile farther a-head, is the proper place for you to anchor as close in shore as you can conveniently; for by this you will be more out of the way of the tide,

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that runs here with great force. Here commences the first part of Chittagong town, which is called *Fringbey-Buzzar*, being inhabited mostly by the Christians; and as this is the place we have chosen for the building of craft, it is here that assistance is most at hand: though if a vessel is desirous of going higher up, she may: but East from Shaw-brush Hill, in the narrow, is a very strong eddy, and some uneven ground, hard. At the upper end is a small creek, that a ship may be laid on shore in, to repair, being more out of the way of the wind and tide than below.

"SUNDEEP is an island of large extent, and, with a good government, might be made a place of consequence: it is fertile, abounding with cattle, and has this advantage of the neighbouring continent, that there is no considerable wild beasts of destruction, as elephants, rhinoceros, or tigers. Of jackalls and wild hogs, indeed, there are enough. Its situation with the Coast of Chittigong, and being at the mouth of the great river, that goes to Dacca, gives it a preference, in my opinion, for a trade by shipping. I have coasted it all round; and, excepting the north part, facing *Babnee* (or *Bominy*) found no danger, but what by adverting to the Draught may be avoided: but cannot say much in favour of the passage between Babnee and Sundeep; for there are many small sands yet undiscovered, for want of time. On the west side, a remarkable tree, called *Dolio Gofs* (or tree) by the natives, is a very distinguishing mark to know where the city stands, which is farther known by a large grove of palm trees; for it stands a mile in land.

"To the southward of the city, is a creek or river, called *Sittal*, that a ship of any burthen may go into and have 4 fathoms at low water, about a mile in, which is the proper place to anchor; where you may lie safe in any Monsoon: but there is some difficulty in getting in, because the flood sets strong to the northward without; and before you can haul up, in the S. W. Monsoon, round the shoal, you will be set on the other point, as the reach in entering, lying S. E. makes the wind scant: you must therefore be obliged to wait the proper time of tide, which is the last of the ebb; and then the flood will set you wholly in.

"All along the west side of Sundeep, which I have coasted up and down, I have yet discovered no other danger than what I have laid down; and indeed it has been a general observation of mine, that where the course of the tide has run North and South, the channel has been the clearest of shoals; but the reverse when it begins to run East and West. I except out of this observation the creek that connects two great rivers, which generally are clearer of shoals than any.

"One thing I have to add is, that West from Kuttubdea is said to be a bank of sand $\frac{1}{2}$ mile broad; which information I have from a Dutch captain who was forced in here; and therefore I believed it best to put it in my Draught, (though I have not yet been on it) that people may be on their guard. Between it and the north-west point of Kuttubdea, he says, he had from 15 to 17 fathoms, soft ground: its distance from Kuttubdea, by his account, is 16 English miles. He had on it 5 fathoms."

DIRECTIONS

DIRECTIONS FOR CROSSING THE HEAD OF THE BAY OF BENGAL.

By Captain RITCHIE.

"THE navigation across the head of the Bay is very easy during the N. E. Monsoon; for by keeping in a proper track, anchoring ground may be had in almost any depth, at pleasure. The usual practice of leaving the land at CHEDUBA * I do not approve of, especially in the latter end of the season, or in February and March; which times are subject to light winds and frequent calms for several days together: for, as the soundings in this track are from 50 to 100 fathoms, there is a risk of being carried off the bank by the southwardly currents, as there is scarcely any possibility of anchoring. The track I recommend, is to coast up the Arracan shore, as high as latitude 21° , or in sight of the White cliffs, which may be seen in clear weather 13 leagues: taking a departure from the White cliffs, steer W. $\frac{3}{4}$ N. or between the latitudes of 21° and $21^{\circ} 20'$ till you arrive at the Swatch, which is a hole or chasm in the bank, of which more will be said hereafter. The soundings in this track are various, as the banks formed by the channel of the Ganges project more or less into the sea. The depths are seldom more than 30 or less than 12 fathoms, except in and about the meridian of the west point of the Ganges, where, in latitude $21^{\circ} 19'$ the depth is only 6 fathoms. It does not appear that there is any danger below the parallel of $21^{\circ} 30'$ between Chittigong and the Swatch. It must be observed, that in general the streams of the ebb

* "When you are got the height of *Cheduba Island*," says Mr. *D'Après*, "and about 8 or 9 leagues to the westward of it, you should steer N. W. till you get into 50 fathoms, mud, which is generally met with in 40 or 45 leagues, on that point of the compass. Thence steer W. N. W. and W. by N. to get soundings on the tail of the Ganges banks (the Sea-Reefs.) You may near them in 12 fathoms, and they are easily known by the soundings, which are hard sand. You find no mud but at the entrance of the several channels which are formed by those banks.

"Keep in the depth above-mentioned, not exceeding 15 fathoms; this will carry you to Ballafore road.

"There can be no direct course pointed out from the tail of the Sea-reefs to this road, on account of the tides off the different mouths of the Ganges (Hoogly River). The best method is to keep the lead constantly going.

"It is not always sufficient to sail to the height of Cheduba Island, to cross from the eastern coast of the Bay, to Ballafore road; for you sometimes, in this season, meet with variable winds from N. E. to N. N. W. and with these winds you cannot make the course above mentioned. In this case, to secure your passage, you must work to the northward, till you are in sight of the Broken islands, which form the south point of Arracan river, from whence, with more certainty, you may cross the Bay, and get soundings off the mouth of Hoogly river, as above; only observe, that after passing Cheduba the tides of Arracan river have an effect."

tides from the rivers run farther out to sea than the flood tides run in; so that in case of a long calm, a ship may be driven too far out, unless she takes the precaution to anchor in time.

" THE SWATCH, or *Swatch of no ground*, a chasm in the bank, is situated between the latitudes of 21° and $21^{\circ} 22'$ North, and the middle of it lies about 50 leagues West of the meridian of the White cliffs. The edges of it are not every where ascertained; but by the knowledge we have of its extent, it appears to be 9 leagues in length, from S. by W. to N. by E. and 5 leagues over. During the survey, only one track was made across it: by that, and the observations of other ships, there is no ground at the depths of 130 to 50 fathoms all over it. The north edge of it is only 5 leagues distant from the land, between which and it the depths are from 13 to 7, and 3 fathoms. Round the other parts, the depths are from 40 to 20 fathoms. It is much to be wished that the shape of the Swatch was fully ascertained, as well as the depths of water to some distance on every side of it, to the intent that ships might know their exact distance from the tails of the sands and Ballafore road: however, the general knowledge that we have of it, will serve to correct the reckoning in a degree sufficient to preserve ships from any danger that might happen from a mistake in the longitude, since the whole breadth of the chasm is scarcely more than 5 leagues.

" Leaving the western edge of the Swatch in lat. $21^{\circ} 12'$ the course is W. by S. $\frac{1}{2}$ S. 15 leagues to the TAIL OF THE EASTERN SEA REEF, on which is 6 fathoms at low water. From hence the common anchoring place in Ballafore road bears W. by N. $\frac{1}{2}$ N. $22\frac{1}{2}$ leagues. But first it is necessary to steer West, till you have crossed the TAIL OF THE WESTERN REEF, which you will do in 7 fathoms. The channel between the two reefs, in this slant direction across it, is 3 leagues over, the ground soft, and the depth 9 fathoms. The reefs are hard ground, and may be known by this circumstance only: from the Western reef, the water first gradually deepens from 7 to 14 fathoms; and afterwards as gradually shoals, till you arrive at the anchoring place in Ballafore road. The latitude of the Bankhall flag-staff I make $21^{\circ} 30'$ and the anchoring place in 5 fathoms in $21^{\circ} 23'$. The Peak of the Neelgur, vulgarly Nelgringe hills, bears W. N. W. from Ballafore road, distant 19 miles. It is situated with respect to Bulramgurry (or the Bankhall) W. $4^{\circ} 30'$ N. distant 14 miles. It is evident that by the bearing of this peak, and the depth of water, the ship's place in Ballafore bay may always be ascertained in clear weather. The tail of the Western reef is in $20^{\circ} 57'$ and the Eastern one in $20^{\circ} 59'$. In crossing the reefs, a ship should come no higher to the northward than the latitude of 21° , which is the track pointed out in the above directions."

THE TIDES IN THE BAY OF BENGAL.

UPON full and change days eleven o'clock makes high water, in latitude $21^{\circ} 30'$ almost the whole breadth of the Bay of Bengal. The motion of the high-water point is at the rate of 20 miles *per* hour in the open sea; and the general direction of the flood is northwardly. By attending to these circumstances, ships may always know the time of tide any where within soundings.

Within 15 or 20 miles of the coast, the setting of the tide is influenced by the shape of the coast, and the openings of the rivers. About midway between Point Palmiras and Chittagong, that is, at the mouth of the Murjattah river, the flood tide sets due North, during the whole flood; but between that, and the mouths of the Ganges and Megna rivers, the farther eastward you go, the more the tide inclines to the eastward of North, especially during the last quarter of the flood. In like manner, between the Murjattah and Hoogly rivers the tide inclines to the westward of North, and in the latter part of the flood sets almost West. Neither here nor on the east side of the Murjattah does the tide ever quite slack; but at low water, by looking at the Chart, the above account of the setting of the tides will appear very conformable to reason and experience, both on account of the shape of the coast, and the indraught of the Ganges, Megna, and Hoogly rivers, whose courses, being much longer than the intermediate ones, require a greater portion of tide, and a greater length of time to fill them.

In Ballasore bay, and as high as Ingellee, the tides are influenced by the bearing of the coast. In the middle of the river's mouth they set North. Off Point Palmiras 8 or 9 leagues, the course of the flood is E. N. E. to N. E. by E. but nearer the land the tide follows more the direction of the coast; so that near the point a ship will be set in towards Kannaka bay, and with a large offing will be set to the eastward.

Along the Coast of Chittagong the tide sets mostly northward; that is, parallel to the coast.

The Times of High Water, at Full and Change, between BALLASORE and CHITTAGONG, are as follows, *viz.*

Places.	Hours.	Min.
Latitude $21^{\circ} 30'$ in the Bay	11	00
Ballasore Road	9	30
Ballasore Bar	10	10
Western Brace	9	36
Eastern Brace	9	45
Ingellee	11	0
Kedgerree	11	30
	Entrance	

Places.	Hours.	Min.
Entrance of the Roymongul River	11	30
Ditto of the Hooringottah	12	00
Bar of Chittagong	1	00
Bominy Harbour	2	30
Islamabad	1	30

TIDE TABLE for the Western Part of the BAY of BENGAL and for the HUGHLY or HOOGLY RIVER.

NAMES of the PLACES.												
Days of the Moon.	Calcutta.	Fulta.	Culpee.	Rogues Creek.	Cajoree, or Kedgerce.	Ingellee, or Ingerlee Road.	Eastern Reef.	Western Bracc.	Ballafore Bar.	Ballafore Road.	Kannaka Bay.	Point Palmiras.
Full and change.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.
	3.0	1.15	1.45	12.30	11.30	11.0	9.45	9.36	10.10	9.30	8.27	8.30
I.	3.48	2.18	1.33	1.18	12.48	12.3	11.18	10.33	10.53	9.48	9.3	9.0
II.	4.36	3.6	2.21	2.6	1.36	12.51	12.6	11.21	11.43	10.36	9.51	9.43
III.	5.24	3.54	3.9	2.54	2.24	1.39	12.54	12.9	12.31	11.24	10.39	10.36
IV.	6.12	4.42	3.57	3.42	3.12	2.27	1.42	12.57	1.19	12.12	11.27	11.24
V.	7.00	5.30	4.45	4.30	4.00	3.15	2.39	1.5	2.7	1.00	12.15	12.12
VI.	7.48	6.18	5.35	5.18	4.48	4.3	3.18	2.33	2.55	1.48	1.3	1.00
VII.	8.6	7.6	6.23	6.6	5.36	4.51	4.6	3.21	3.43	2.36	1.51	1.48
VIII.	9.24	7.58	7.11	6.54	6.24	5.39	4.54	4.9	4.31	3.24	2.39	2.36
IX.	10.12	8.42	7.59	7.42	7.12	6.27	5.42	4.57	5.19	4.12	3.27	3.24
X.	11.00	9.30	8.47	8.30	8.00	7.15	6.30	5.45	6.7	5.00	4.15	4.12
XI.	11.48	10.18	9.35	9.18	8.48	8.3	7.18	6.33	6.55	5.48	5.3	5.00
XII.	12.36	11.6	10.23	10.6	9.36	8.51	8.6	7.21	7.43	6.36	5.51	5.48
XIII.	1.24	11.54	11.11	10.54	10.24	9.39	8.54	8.9	8.31	7.24	6.39	6.36
XIV.	2.12	11.42	11.59	11.42	11.12	10.27	8.42	8.57	9.19	8.12	7.27	7.24
XV.	3.00	1.30	12.47	12.30	12.00	11.16	9.30	9.45	10.7	9.0	8.15	8.12

REMARKS

REMARKS ON THE BORE.

By Major JAMES RENNEL, F. R. S.

"THE Bore (which is known to be a sudden and abrupt influx of the tide into a river or narrow strait), commences at Hoogly Point (below Fulta), the place where the river (Ganges) first contracts itself, and is perceptible above Hoogly town; and so quick is its motion that it hardly employs 4 hours in travelling from one to the other, although the distance is near 70 miles. At Calcutta it sometimes occasions an instantaneous rise of 5 feet: and both here and in every other part of its track, the boats on its approach immediately quit the shore, and make for safety to the middle of the river."

THE COASTS OF ARRACAN AND AVA.

From Captain RITCHIE.

CAPTAIN *Ritchie*, having sailed, in order to survey these parts, from the end of the Sea Reefs, to the White Cliffs of Arracan, observes that his most southern latitude had been $20^{\circ} 46'$ North, and the greatest depth of water 74 fathoms, or in general too great for anchoring; therefore he advises all ships that mean to cross the head of the bay, to keep in the latitude of 21° North, or a little to the northward of it, otherwise they may be drove out of soundings; or be obliged to anchor in too great a depth of water to attend the sea and land breezes conveniently; add to this that these breezes do not take place regularly at any considerable distance from the shore any where about the Bay of Bengal.

Dombuck or St. Martin's river, at the south end of the White cliffs, is supposed to be the end of the Coast of Chittigong, and the beginning of the COAST OF ARRACAN, or *Arakan*, and properly RECKAN.

From the point at this south end, 40 miles to the S. S. E. lies the small ISLAND OF MARTIN, to the westward of which about 8 miles is a reef of breakers with 2 fathoms water close to them, on all sides, and 4 fathoms at a small distance from them. Between the islands and the reef you have 10 fathoms, fine soft bottom. This was called St. MARTIN'S

MARTIN'S REEF by M. Ritchie, who discovered it on the 8th of December 1770, a few hours before the *Middleton* from Pegu, Dennis Holland, master, was lost upon it.

From St. Martin's island to Mosque point, the north point of the entrance into Arracan river, the distance is about 9 leagues to the S. E. Three leagues S. S. W. off this point lies a small rocky island, very little above the level of the sea, with only a small patch of sand covering the north end of it; it is exceedingly dangerous both on account of its smallness and lowness; of its being steep to, and far off land. M. Ritchie called it OYSTER ISLAND from the multitude of that kind of shell fish that are growing to it.

They reckon 15 miles S. E. by S. $\frac{1}{2}$ S. from Mosque point to the north end of the westernmost of the BROKEN ISLANDS: these are three in number, and situated at the mouth of Arracan river, or rather they form the east side of its entrance; we mean here the common track into it, for it seems that there are passages into the river at all sides, and more over between the westernmost two, there is very good anchorage for ships, from 13 to 15 fathoms, fine soft bottom, and which lies in a N. N. W. and S. S. E. direction. These islands are mountainous, woody and rugged, without any appearance of inhabitants or cultivation; and this description may serve for the whole coast of Arracan to the northward as well as to the southward of them, which presents a most dreary prospect from the sea. The south ends of the Broken islands are beset with great black rocks, many of which being above water make a very rugged appearance, but these do not extend to any great distance from the land, and are not dangerous, as they can be seen. At the south end of the westernmost island a spit of hard rough ground projects into the sea, but still less dangerous than the rocks, as it has 11 fathoms water on it, very coarse grey sand with black specks.

From the south end of the Broken islands, which there form a bight, to the north end of Cheduba island, the course is S. S. E. 20 leagues; about half way are two clusters of great rocks above water, pretty near each other (called *The Terribles*). CHEDUBA is situated between the latitudes $18^{\circ} 36'$ and $18^{\circ} 50'$ North, extending N. W. and S. E. in length about 20 leagues. "It is inhabited, and partly cultivated for rice, on the side next the main land." At its north end there is a large reef of rocks which extends into the sea a league or more, and is dangerous to approach in the night, but in the day-time it may be seen in good time to be avoided, for many of the rocks appear a considerable height above water. About 4 miles from that shore in a direction S. W. and N. E. you have no less than 13 fathoms water, but with a variety of bottom, such as black rock, coral rock, and coarse grey sand with shells and small stones, both rotten and of the pebble kind. At 15 miles westward of the north end of the island, you find no ground at 100 fathoms.

Note. About 10 miles to the northward of Cheduba 12 o'clock makes high water, on full and change days of the moon; the flood sets N. E. by N. about 2 miles per hour on the

the springs; and the ebb sets W. S. W. about half as fast. Mr. *Ritchie*, who experienced there a current setting strongly to the northward along the shore, makes the following remark: "Navigators of the bay," says he, "generally assert that the current never sets to the northward upon this coast, at this season of the year (December); but here is a strong proof of the contrary: the truth is, they do not go near enough the shore, either to get the benefit of the sea and land winds, or of the changes in the currents."

A chain of small islands is lying off the south-east end of Cheduba, seemingly an appendage of that island, and linked together by a shallow rocky reef upon which the sea breaks very high in several places: the southernmost island of this chain lies 13 miles S. E. by E. from Cheduba; it is of a circular form, and its greatest width does not exceed $\frac{1}{2}$ a league; it is steep to on every side, except to the eastward, where there is a spit on which the sea is breaking: about the middle of the island there is a little hummock covered with trees, one of which overtops the rest, which makes it very remarkable. This island is called FOUL ISLAND; Mr. *Ritchie* named it *Christmas Island*: on the reef to the northward of it you have no less than 6 fathoms water, rocks and coarse brown sand. And 8 or 9 miles to the S. E. by S. nearly, and on the same reef, you come to FRESH-WATER ISLAND, a very small spot above water, with a shoal projecting above a mile on the east side, and soundings from 8 to 6 fathoms all round: this must be the "False Island" of Captain *Charles Newland*.

TREE ISLAND, (called *Foul Island* and St. Stephen's Island by Mr. *Ritchie*), lies about S. E. by S. 10 leagues from the true Foul island; it is situated in the latitude $18^{\circ} 6'$ North, and at 12 miles distance from the coast, "We had," says Mr. *Ritchie*, "23 fathoms water very near it, and saw no appearance of breakers or foul ground near it." This is a high round mountain in the sea, in the form of a conoid, and totally covered with trees. The main land here presents us with a triple ridge of vastly high mountains, which appear very smooth and regular, and sloping gradually at both ends, but the slope to the northward is the most abrupt: these are the extremity of the Mog mountains which separate the coast of Arracan from

THE COAST OF AVA; this extends in a south direction above 40 leagues to Cape Negrais. About 14 leagues S. S. E. $\frac{1}{2}$ S. from Tree island, and near 10 miles from the shore, lies a cluster of very large rocks called CHURCH ROCKS on account of their appearance, and which are described in the following section: Mr. *Ritchie* gave them the name of *St. John's Rocks*. The soundings in this course are from 27 to 30, 35 and 30 fathoms, 2 or 3 leagues off shore.

Twelve leagues S. $\frac{1}{2}$ W. from these rocks are the CALVENTURAS, or *Calventura Rocks*, (the *Buffaloe Rocks* of Mr. *Ritchie*), in latitude $16^{\circ} 52'$ North, distant from a sandy point of the mainland above 4 miles, so that there is a fine passage, with 18 fathoms water between them and the shore.

The Calventuras are in two divisions which bear N. W. by W. and S. E. by E. from each other. The south-eastern division consists of two high rocky islands covered with trees and bushes; they are joined together by a shoal reef of rocks under water, upon which there is a single rock above water, about half-way between the islands. At $\frac{1}{4}$ of a mile from the easternmost of these rocks, between them and the shore, you have no less than 8 fathoms water, coarse grey sand, with shells, small stones, and broken corallines.

The western division is composed of 7 black rocks of different magnitudes and uncouth figures; *one resembles an old church* with a mutilated spire; another stands upon a very small base, and is so amazingly bulky at the top, that one would think the next wave is going to beat it down into the sea.

Twenty-five miles South of the Calventuras are the BUFFALOE ROCKS; you have soundings in this course from 10, 17, 14, 13, 18 and 20 fathoms, at 4 or 5 miles off shore. The Buffaloes, called *Calventura Rocks* by Mr. Ritchie, are a heap of very rugged rocks, high above water, in latitude $16^{\circ} 20'$ to $16^{\circ} 23'$ North, and lie about one league distant from the land. About a mile to the westward of them you have no less than 20 fathoms water, fine soft mud. Strangers coming from the southward, in the night, ought to be cautious how they stand in here, for the soundings are very regular close to these rocks.

CAPE NEGRAIS lies 21 miles to the South of the Buffaloe Rocks, and is the westernmost point of the great island called after its name; there the coast turns to the S. E. and at 7 miles from the cape lies POINT PAGODA, or the south point of *Great Negrais Island*, which is easily known by a huge rock above water very near it, and a hill on which is a pagoda: the western coast of this island runs N. by W. $\frac{1}{4}$ W. it is of a moderate height, rugged at the top, and may be seen 9 or 10 leagues off; there are along it several islands with a shoal, close to which are 4 fathoms water, and whose westernmost point lies 3 miles off Pagoda point.

Point Pagoda and *Point Porean* form the entrance of the river of Ava; the first on the west, and the other on the east side; they lie from each other S. E. by E. and N. W. by W. 10 miles distant; and about 5 miles up the river is the *Little Negrais Island*, remarkable by its hill.

The whole of the Coast of Ava which we have been describing, from the extremity of the Mog mountains to Negrais, is a continual scraggy ridge of land tolerably high, broken into cliffs of reddish earth in many places, and generally with low trees and brushwood, without any signs of cultivation or inhabitants, towards the sea-coast; the first low land you meet with is Point Porean, which is totally covered with wood.

Five miles South of Point Pagoda, before the entrance of Ava river, lies *Duran Diva*, or DIAMOND ISLAND, about $1\frac{1}{2}$ mile long and a mile broad; it is low, covered with wood, and surrounded with shoals.

About

About 8 miles S. by E. from Diamond island is a very dangerous reef, called by the French, the *Drowned Isle*, or Sunken Island, and by the Portuguese LA GUARDA, which the English seamen have corrupted into a variety of names. This reef, by Captain Ritchie's observations, is situated in the latitude $15^{\circ} 42'$ to $15^{\circ} 43'$ North; and what is to be seen of it is a ledge of rocks just above the surface of the water, extending N. E. and S. W. about a mile in length and very narrow, but the sea breaks all about it to a considerable distance *. When the west end of Diamond island, and the east end of Little Negrais hill are just drawing into the same line, La Guarda reef is also in the same direction, viz. N. N. E. at the same time the western extreme of Negrais bore North; and there are over-falls from 19 to 30 fathoms, rocky ground. "This last remark," says Mr. Ritchie, "shews the exact position of Sunken island with respect to the land of Negrais, and might be of great use to ships passing this way, as by help of it they might round La Guarda very close, without fear of being drove off the land; and by that means avoid going through the *Race of Negrais*, in which there is a very strong irregular tide, foul ground, and a confused swell, even in the smoothest weather. The race is between the spit of Diamond island and La Guarda."

INSTRUCTIONS FOR THE CHANNEL BETWEEN DIAMOND ISLAND, AND
ALAGADAS (LA GUARDA) OR THE DROWNED ISLE;
AND FOR SAILING FROM PAGODA POINT, ALONG THE COASTS OF PEGU AND
ARRACAN, TOWARDS BENGAL, IN THE N. E. MONSOON.

By Captain GEORGE HAYTER †.

1^o FROM DIAMOND ISLAND TO CAPE NEGRAIS.

"SHIPS coming from the eastward endeavour to fall in about 9 or 10 leagues to the eastward of DIAMOND ISLAND. About $14^{\circ} 30'$ North, and 23 leagues to the south-eastward of that island, you will have soundings, in 65 fathoms water, fine blackish sand, when you must endeavour to get to the northward, having regard to the tides out of the Gulf of Martaban, which I observed to set stronger to the westward than to the eastward.

* Captain Walter Alves of the snow *Victoria*, 1759, observes that in the S. W. monsoon the sea breaks very high on this reef; but that the breakers do not appear in the N. E. monsoon, the wind being always off shore.

† Captain George Hayter, then an officer in the *Worcester*, was afterwards captain of the *York* Indiaman.

" In $15^{\circ} 24'$ north latitude and about 10 leagues to the eastward of Diamond island, you will have 20 fathoms water, sand, and some small shells; and, if clear weather, you may see the land to the N. N. E. from your mast head, which is a part of Baragou (Bragu) island, being a low land with trees. I would advise to steer as far northerly as the wind will permit, till you shoal to 10 fathoms; or, if apprehensive of the winds being scant, to 7 fathoms, soft ground. Keep in that depth of water, and not under it; and when you have sight of Diamond island, steer a little wide of it: as soon as you get it to bear off you N. W. by N. it will be best to haul more off from it, increasing your depth to 9 and 10 fathoms; then if you steer W. N. W. it will keep you in or near that depth (having regard to the tides) till the island is brought to bear North of you, about 4 miles distance: take care not to exceed 10 fathoms, in which depth you will have soft ground. If you should be obliged to turn it, you must not deepen your water above 10 fathoms, nor shoal it under 7; and if you find, steering W. N. W. your water deepens or shoals, correct your course accordingly.

" From the south-west point of *Diamond Island*, there runs a shelf of rocks near $1\frac{1}{2}$ mile in length, at low tide very little above water, and most of them covered at high water: from this a dangerous reef runs to the S. S. W. 6 or 7 miles, on which the soundings are very irregular; it is not safe for any ship to venture over it, as there are several rocks covered only with $2\frac{1}{2}$ fathoms water.

" When Diamond island is North from you, about 4 miles, and you in 10 fathoms, mud, steer W. by N. in much the same depth, taking care not to shoal it till you bring the *Hill on Little Negrais*, very near on with the eastmost point of Diamond island: then haul away to the southward, so as to keep them in the same position, taking care not to shut in any part of Negrais hill with the island: this will carry you along the east side of the reef, at about $\frac{1}{2}$ a mile distance, in a depth of water from 10 to 12 fathoms. In steering this course, as soon as you deepen your water to 15 fathoms, and no ground with your hand line, haul to the westward, till you again get soundings, taking care not to go under 10 fathoms. In rounding the reef, if you have Little Negrais hill near all shut in with the island, and in hauling to the westward, if you shoal suddenly, haul off immediately South, or S. S. E. for when you have the westernmost part of the hill, just open with the westernmost point of Diamond island, there is a dangerous rock, which I take to be the easternmost part or point of the pitch of the reef: East of this, less than a cable's length, you will have 7 fathoms water; and West, or about W. by S. from it, lies another rock which you are abreast of, when you have the westernmost point of Diamond island on with the hollow on Little Negrais hill. I would advise, by all means, your boat to lie on the eastern pitch of the reef, or near it, in 6 or 7 fathoms: then you may round her about 2 cables' length, by which you will be certain to avoid a dangerous rock, that lies between the pitch of this reef, and the Drowned isle, or Alagadas, and has 14 fathoms at half a cable's length from it: on this several ships have

struck, and, to mention one, his majesty's ship *Exeter*, commanded by Lord *Harry Pawlet*, in the latter end of November, 1748.

" In sounding the reef at that distance, you will have from 10 to $11 \frac{1}{2}$ fathoms; take particular care, after you are past the westernmost rock (which you will know by the marks for it before mentioned) not to shoal your water, by hauling to the northward, till you bring the westernmost point of the Great Negrais to bear N. $\frac{1}{2}$ E. and Diamond island N. E. $\frac{1}{2}$ E. you may then steer for the westernmost point of Negrais, which is termed *Cape Negrais*, having regard to the tides; this course will carry you along the west side of the reef, in 9, 10, 11, 12 or 13 fathoms.

" Observe, that after you are past the westernmost rock, before mentioned, and in 10 fathoms water, (where we anchored) about W. S. W. one mile distance; lies a bank on which we had but 7 fathoms; before we came to it, we had 14, and in about two cables length from it, 7 fathoms, hard ground: to the W. S. W. increased the depth to 14 fathoms; not having time to spare, we could not examine it by sounding farther, but I do not think it unreasonable to suppose, that this shoal may be near adjoining to the rock before mentioned, on which the *Exeter* struck, 1748. [The westernmost point of Great Negrais bearing N. $\frac{1}{2}$ E. easterly; the south point or Porean island E. N. E. $\frac{1}{2}$ E. the Alagada (la Guarda) south-westerly to S. by W. westerly; the Little Negrais hill, very near half way between Diamond island and Pagoda point.] In keeping in $9 \frac{1}{2}$ or 10 fathoms on the reef, you will be sure to avoid it, when you bring Little Negrais hill, within half its length, on with Pagoda point, which will bear about N. E. $\frac{1}{2}$ E. you will have 13 fathoms, and Diamond island from E. by S. to E. by S. $\frac{1}{2}$ S. you may then steer directly in for Pagoda point. You will gradually shoal your water to 6 fathoms, which is a good depth to round the point in, at about 1, or $1 \frac{1}{2}$ mile distance; though when it bears about West of you, you will find that depth a great deal nearer.

" If the wind should oblige you to go more westerly, so as to shut the hill on Little Negrais in with Pagoda point, take care not to bring the point more easterly than E. N. E. nor borrow nearer the shore than 5 fathoms, on account of a shoal which runs W. N. from Pagoda point, above a league. In this depth you will be about 4 miles from the shore (if you are not to the northward of the red cliff, where the shoal ends), and then find deeper water, having 10 fathoms, within 2 miles of the shore.

" You may anchor in about 6 fathoms, the point bearing from N. N. W. to W. N. W. if you shut the point more in, the channel grows narrow. In coming out steer so as to make a S. W. $\frac{1}{2}$ W. course good, allowing for the tide*, which will carry you out in 6 fathoms or $6 \frac{1}{2}$; and when Diamond island bears S. E. $\frac{1}{2}$ E. or S. E. by E. off, you are without the sand that stretches W. N. W. from Pagoda point, and as far to the northward as the northernmost red cliff you see."

* There is obviously a mistake here.

2° FROM CAPE NEGRAIS TO THE CALVENTURAS.

" **T**O Cape Negrais you may, if you are obliged to turn it, shoal your water to about 10 fathoms, when you will be within 2 or $2\frac{1}{2}$ miles off the shore; and not to stand further off than 18 or 20 fathoms at most.

" The rocks called the BUFFALOES, are single high rocks at about $2\frac{1}{2}$ miles from the shore, several of them white, and extending from North to South $2\frac{1}{2}$ or 3 miles: they lie North from Cape Negrais, in latitude $16^{\circ} 14'$; you may pass them at about $1\frac{1}{2}$ mile distance, and will have then $13\frac{1}{2}$ and 14 fathoms water.

" N. $\frac{1}{2}$ E. 10 miles from the Buffaloes, lies an island $2\frac{1}{2}$ or 3 miles from the shore; it is called BROKEN ISLAND †, as at a distance it appears uneven and craggy, especially from the northward: when you come up with this island you gradually deepen your water, and abreast of it will have 25 fathoms, mud, 4 miles off shore: you will also just get sight of the Calventuras, which bear N. $\frac{1}{2}$ W. from it.

" If the wind and current are so favourable that you may sail without these rocks, endeavour to keep in 40 to 50 fathoms, which depth to the westward of them, you will find very near; for which reason it is advisable to keep a good offing in the night, and frequently to use your lead and line, the currents being subject to change, as it has been often experienced.

" Ships that go without the CALVENTURAS, seldom see the land, unless at a very great distance, till they make the island Cheduba, which lies in latitude $18^{\circ} 44'$ North; but I think the going within these rocks, is, by much, the most expeditious method, as there is good anchoring along shore; and by being near the land, you are more likely to meet with land winds, which blow but a little distance from the land, besides the advantage of anchoring when both wind and current are against you, and at the same time of being more out of the current's way.

" In January 1758, in going this passage, we were from the Broken island, (in latitude about $16^{\circ} 30'$ North) 5 days beating, and gained but 6 miles, when seeing a small vessel passing within the Calventuras, stood in and spoke with her; she told us it was a good channel; we stood in shore, and next day turned through, the wind being right an end.—In December following of the same year, made Cape Negrais the 4th, did not stretch in nearer than 6 leagues: got sight of the Calventuras the 8th; and the 12th finding that we had gained but very little ground, stood in abreast of the Broken island,

* Between $16^{\circ} 20'$ and $16^{\circ} 23'$, according to Mr. Ritchie, who calls them the Calventuras.

† Captain Ritchie takes no particular notice of this island.

‡ Between $18^{\circ} 36'$ and $18^{\circ} 50'$ according to Captain Ritchie.

and came to in 23 fathoms, mud, to wait for the land wind: kept in shore, as the year before, and the 16th were abreast of the northernmost part of Cheduba island. The 19th we were off Arrakan gut, where we met a small country vessel, who had been one month and 4 days from Negrais, and had stood off the land, only keeping it in sight. The first time of our going along shore, we did not sail in the night, (as this coast, both by our pilots and the French accounts, is said to be dangerous, and no anchoring,) so that we were 9 days to the north part of Cheduba island. But to return:

" From the Broken island N. N. E. about 6 or 7 miles, lies a small island, that has a ledge of rocks running from it to the S. W. near 2 miles, on which the sea breaks sometimes; and near the island some rocks just appear above water.

" N. by E. or N. $\frac{1}{2}$ E. about 8 or 9 miles, from Broken island lies a very remarkable *Single high Black Rock*, about $3\frac{1}{2}$ or 4 miles distant from the shore. When you are past Broken island, I would advise you to go no nearer the reef of rocks than 23 or 25 fathoms; and when you are to the northward of the Single high rock, 3 or 4 miles, you may shoal your water on the main to 16 fathoms, without fear, when you will be 4 miles from the shore. There is a very good and clear passage between the Calventuras and the main land.

" These rocks are in three divisions; the northernmost, which, at a distance, appears like a single rock, consists of one large and four small rocks near it, and lies in $16^{\circ} 50'$ North. The southernmost lies from this S. E. $\frac{1}{4}$ S. in latitude $16^{\circ} 46'$; it is by much the largest, and at a distance it appears also as single; but it consists of one large rock and two small ones close to it, all three covered with wood: one of these small rocks is very remarkable, having a passage through it like the arch of a bridge. From this N. $\frac{1}{4}$ W. about 2 miles, lies the other division, which is a single high rock, or island, covered with wood; when it bears W. by S. or W. S. W. of you, it has a very great resemblance to a man's head and face: this island lies from a sandy point on the main W. by S. $\frac{1}{4}$ S. 7 or 8 miles: the southernmost of the Calventuras is about 3 leagues from the main.

" In going through this channel, if you have a leading wind, keep mid-channel, where you will find 20, 22, 23, and 24 fathoms, soft ground. If you have a westerly wind, and be obliged to turn it through, you need not apprehend any danger, provided you should observe the following directions: *viz.* Take care, before you bring the southmost Calventuras to bear about W. N. W. not to shoal your water on the main under 13 fathoms, hard sand, nor towards the island, under 16 fathoms, hard ground, which you will have when they bear about N. W. distance 2 miles from you. When you bring the island, or rock, to bear more westerly than W. N. W. do not venture to shoal your water on the main, under 16 fathoms, on account of a *White Rock* above water, about the size of a long boat, and lying East from the south Calventuras 1 mile off shore. At a mile distance
from

from this rock to the westward, is foul ground; you shoal from 15 fathoms, soft ground, to 8 fathoms, hard, at one cast, as we sounded in our boat. From hence close to the rock, very irregular soundings of 8, 5, 6, 7, 5, 8, 5, rocky, till within $\frac{1}{2}$ of a mile from the rock, at which distance, or rather more, are several rocks, near the surface of the water, on which the sea breaks. We had, at about 8 yards distance from them, 4 fathoms water and $4\frac{1}{2}$; along side the White rock, that we could just touch with our oars, we had 3 and $3\frac{1}{2}$ fathoms.

"In standing towards the Calventuras, do not shoal your water under 18 fathoms, hard ground, which depth you will have at $1\frac{1}{2}$ mile distance from the southmost; and at 1 mile from the northmost of the two eastern divisions of the Calventuras, the true channel is soft mud. You may borrow within 2 or $2\frac{1}{2}$ miles of the *Sandy Point*, on the main: this point has several remarkable black rocks, on the beach close to, and some in the water. From Sandy point to the northward runs a reef of rocks near one mile; and about $\frac{1}{2}$ a mile from the shore, within them, appears like the entrance of a river, with very remarkable high large trees; to the northward of this point, N. by E. 4 miles, lies a *Sandy Island*, with trees on it, near a mile distance from the shore. In turning up do not venture nearer this bank than 12 fathoms, which you will have within $1\frac{1}{2}$ mile distance from it: if in the night-time, and a turning breeze, I would not advise you to shoal under 20 fathoms, and not farther off than 26, till you are 4 leagues to northward of the Calventuras.

"As you get more northerly, you find the water rather deepens, when you may stand off to 35, but be sure not to get out of soundings, for fear of its falling calm: you may stand in again to 23 and 22 fathoms, in which depth you will be about 4 miles from the shore. There are several small islands along this shore, and very near it one pretty long, extending North and South or thereabouts, near one league: the body is in latitude $17^{\circ} 4'$; at its north end lies a Sandy Island, with a remarkable large tree on it, off which there are some rocks to the northward, at a little distance; the south end has likewise some breakers at near $\frac{1}{2}$ a mile distance from it: abreast of this island, about 5 miles off, you will have 25 fathoms, soft ground."

3° FROM THE CALVENTURAS TO FOUL ISLAND.

"FROM the northernmost of the Calventuras, about N. $\frac{1}{4}$ W. or north-westerly, in $17^{\circ} 22'$ North latitude lie the CHURCH * ROCKS, at least 5 leagues from the main. They consist of one large and three small ones; the large one is high, and when bearing from you N. W. appears like a circular fortification, with a building in the middle; two of the small ones lie about E. by N. from it; the other about West or W. $\frac{1}{2}$ S. and very near it. When they bear from S. W. by S. to S. S. W. the large one has very much the appearance of a country church with a square tower, from whence they got their name. Within these rocks, or about 2 miles distance, you will have 36 fathoms water, soft mud; the main here appears to be without danger, but close to, where are several rocks above water and small islands. Four leagues to the northward of the Church rocks, you may anchor near the shore within 2 miles, or thereabouts, in $14\frac{1}{2}$ or 15 fathoms, mud.

"From the Church rocks, about N. $\frac{1}{4}$ W. lies a large island, the body of it in $17^{\circ} 57'$ North, which I have called † TREE ISLAND, from its being full of wood, and having a remarkable single tree on a low point to the northward. This island seems to lie about S. W. and N. E. a full league, or $1\frac{1}{2}$ league in length; it rises gradually from the S. W. to an high hill, and declines to the north-westward much steeper: from the northward runs a low point near $\frac{1}{2}$ a mile, on which is a remarkable single tree, seeming to stand in the water: from the S. W. point, better than half way to the hill on it, is a remarkable range of high trees much above any of the rest.

"This island lies from the bluff point on the main W. by N. $\frac{1}{4}$ N. distance 8 leagues. The land, from this point, falls into deep bays, both to the northward and southward; within the point, and about East from it, 1 mile, is another bluff point, and much like it. In working between this point, and Tree island, as you gain near the point, you find the water deeper, than a little to the southward, having 21 fathoms, within 2 or 3 miles of the shore. Before you bring the island to the westward of N. W. you may stand off to 36 or 38 fathoms, and after it bears more westerly, I judge you will shoal your water on it. At about 3 leagues from the main you alter your soundings, from soft and muddy, to hard sand and gravel, but have no alteration in your depth of water; all the rest, excepting this $\frac{1}{2}$ mile or mile where we found soft ground.

"Along this shore are several islands, and the land on the continent is very mountainous; there is a remarkable island in about $18^{\circ} 14'$ latitude, it lies near North and

* Mr. Ritchie calls these *St. John's Rocks*.

† *Foul Island* by Mr. Ritchie.

South, and about $1\frac{1}{2}$ mile in length; at a distance from the southward, it makes like a point, and there appears to be another island within it, to the eastward, where the land falls into a bay: from the south point of the first of these islands, runs a reef of rocks, to the S. S. W. some above water, for about 1 mile and a $\frac{1}{2}$; we passed within about 2 or $2\frac{1}{2}$ miles of them, and when abreast of them, had 20 fathoms water. When to the northward of these rocks, you may go near the shore to 16 fathoms; being in that depth, and bearing about 1 league, we saw a small island, called in the draughts Foul Island (*Negamale* by the natives), W. by N. $\frac{1}{2}$ N. of us, distance about 8 or 9 leagues; we then tacked, with intent to go about 2 leagues wide of it, and stood W. by N. with light breezes, about 6 hours; when finding we shoaled our water on hard sand to 17 fathoms, came to an anchor, and found a southerly current.

"In the morning sounded West from the ship, very soon shoaled to 14 fathoms, and, at about $3\frac{1}{2}$ miles from her, got on a reef of coral rock, which seemed to lie near North and South, the water very clear; as we passed over some of them, there did not appear to be above 3 fathoms, though the least water we had in going over the reef was 7: we judged the lead fell between the rocks, as they were intermixed with many sandy spaces; in less than half a cable's length, to the westward, had 10 fathoms, and then gradually increased to 16 and 17, sand. When on this reef, the highest part of Tree island lies S. S. E. distance about 4 leagues; and on the main about West, are two high mountains, or more properly, two risings on the same mountain, between which there is a small hill; on the shore are two small islands (at least they appear at that distance as such) making two gaps: the rising hill, between the two mountains, appears directly over the southernmost of the two gaps, when on the reef, and Tree island S. S. E. When in 17 fathoms we stood away in the boat for the island, keeping the same depth till we brought the ship to bear E. by N. $\frac{1}{2}$ N. then stood directly for it, and in no less than 13 fathoms, regular soundings, we weighed, and went through this channel.

"Foul island bears from Tree island N. N. W. $\frac{1}{2}$ W. 8 or 9 leagues, and from the south end of Cheduba N. N. W. $\frac{1}{2}$ W. 13 leagues. When we were out of the channel, we deepened presently our water to 30 fathoms, mud, the island S. S. E. $\frac{1}{2}$ E. In latitude $18^{\circ} 6'$ North, or thereabouts, I judge there is a good channel, as we, the day before, brought the island to bear South, about 8 miles distance, and had no less than 21 fathoms water, when the wind coming from the sea, stood to the eastward. To the northward of this, at about 3 leagues from Foul island, or rather nearer, is a good channel, which we another time went through, with pretty regular soundings; the least water was $12\frac{1}{2}$ fathoms, Foul island bearing N. N. W. $\frac{1}{2}$ W. 7 or 8 miles."

REMARKS

REMARKS FOR THE STRAITS OF CHEDUBA.

By Captain CHARLES NEWLAND.

"COMING up the Coast of AVA, bound to the northward, if you are desirous of going through the Straits of Cheduba you must endeavour to make the *Isle Sale*, (Foul Island) which lies in the latitude of $18^{\circ} 20'$ North, and about 5 leagues to the southward of Cheduba; being about 3 leagues to the eastward of this island, you will see several more to the northward of you, the three westernmost of which make the Straits; Cheduba is known by being the most westerly, it is pretty high, and has many lofty hummocks upon it; but on the southernmost end is a high bluff-head, which at a distance you will take for the southern extreme of it, till you have risen the low land, appearing like islands separate from it, but when you are near you may perceive, from the mast-head, they join the bluff, and are really a part of Cheduba.

"The next island to Cheduba is round and of a moderate height, the upper part appearing black, and the under white; this which lies almost in the middle of the Straits, you leave on the larboard side going through: to the eastward of that are the islands which form the easternmost part of the Straits; they are 4 or 5; though they appear to you, when abreast of *Isle Sale*, as one. In nearing these islands, you will perceive a rock in-shore, called the *Commodore*, from its appearance of a ship under sail with a broad pendant flying; this rock you must steer for, it being, when opened on the south part of the above islands, and forming the southern extreme of the Straits, giving it a birth, about 12 miles to the eastward of you. As you draw near to Cheduba, you will see, under the high bluff land, a small low island surrounded with rocks, which appears so close to Cheduba that you will take it for the beach, though it lies near 4 miles distance from it; this is very dangerous, there being a reef extending to the N. E. about $1\frac{1}{2}$ mile, on which the sea continually breaks, so that I would advise no one to come within 3 or 4 miles of it, nor even at all, if it is possible to keep the eastern shore on board. From this low island there are innumerable rocks stretching to the southward, as far as the *Isle Sale*, which if there be a passage between them must be extremely hazardous.

"The *Isle of White*, which I call the *Round Island*, lying in the Straits, is rather more than a third over from Cheduba to the easternmost islands; the channel is to the eastward of it, standing rather nearer to the eastern islands than to it, because of a dangerous reef, running near 2 miles from the north-east part of it. After you are shot in so far as to bring this island to bear S. W. by S. you will shoal your water to $\frac{1}{2}$ less 5, which may continue till you have brought it ast to South; then you will have constantly 5 fathoms

till you near the north-east part of Cheduba, of which you must also be very careful (there being a Sandy Bank, on which the sea breaks), stretching more than a third of the way over to the opposite point, for which reason you must endeavour to sail within 1 or $1\frac{1}{2}$ miles of the said eastern point; it is high bluff land, and when you first enter the Straits, you take it to be the northern extreme of the eastern islands, but you will find they continue from thence above 4 leagues further to the N. W. as does also the Island Cheduba to the N. N. W. When you have rounded the sand point, before mentioned, and deepen your water to $6\frac{1}{2}$ or 7 fathoms, you will then be about 2 miles from the eastern shore, having the northern extreme of Cheduba to bear W. $\frac{1}{2}$ S. and the northern extreme of eastern islands N. W. $\frac{1}{2}$ N.

" From thence you must endeavour to steer a mid-channel-course between the two points, there being a ledge of rocks extending from each; if you have the two extremes on the bearings before mentioned, you may steer N. W. by W. on which course you will have $6\frac{1}{2}$ and 7 fathoms, till you have sailed about 6 miles; then you will shoal gradually to $5\frac{1}{2}$, which was the least water we had, in the Ahmoody, when we passed between them; and as it was in the night time cannot determine the distance from either shore, but judge we were about 2, or $2\frac{1}{2}$ miles from the eastern point: you may continue to have $5\frac{1}{2}$ fathoms for $1\frac{1}{2}$ or 2 miles, and then will deepen gradually to what depth you choose to run out in. I would by no means haul to the northward of N. W. by W., till I was in 22 fathoms, because the day after we cleared the Straits, having got into that depth, we hauled up N. $\frac{1}{2}$ W. and about 10 in the morning saw the TERRIBLES (p. 328,) which are certainly the most dangerous rocks upon the coast, bearing N. $\frac{1}{2}$ E., we then hauled up North, in order to get a perfect sight of them, keeping the lead constantly going, and coming no nearer than 20 fathoms. At noon we had a very good observation, and found the body of them to lie in $19^{\circ} 28'$ North, extending several miles to the northward and southward; they bore at that time N. E. about 5 miles, our depth of water 20 fathoms, sand and shells. These are the more dangerous, as neither the *English Pilot* nor *New Directory* give any account of them; they lie 6 or 7 leagues to the eastward of the islands off the Coast of ARRACAN, and bear from the Broken islands S. S. W. about 7 leagues.

" I cannot pretend to give a true information of all the dangers in the Straits of Cheduba, as that must undoubtedly require a particular survey; what I have said is from my own experience in our track through, and I have pen'd these remarks principally to retain them for my own use, yet if they will be of the least service to any one, I shall be very happy at the assistance they may give him.

" I must observe that both Cheduba and the eastern islands are inhabited.—A boat from the latter, with 5 men, came within hail of us, but we could by no means persuade them to come aboard, they rather seemed to decline any communication with us, de-

firing.

firing, as we were then at an anchor, we would leave the place. I sent the pinnace, to endeavour to treat with them, but they made their way ashore.

"As these people are therefore not to be trusted I think every vessel should be on their guard; they have several boats, which we saw, and may, when you are becalmed, or at an anchor, in the night surprize you with an unwelcome visit."

DIRECTIONS FOR SAILING

FROM PAGODA POINT TO BALLASORE ROAD,

In the Months of December and January.

IN working out from PAGODA POINT you bring Diamond island to bear S. S. $\frac{1}{2}$ E. or S. E. by E. and that will carry you clear of the tail of the sand, which stretches as far to the northward as the northernmost red cliff you see, but borrow no nearer the tail of the sand than 6 fathoms—from hence to Cape Negrais come no nearer than 12.

From Cape Negrais to the BUFFALOES keep the same depth; and then you may stand off to 25 and 30 fathoms till you come up with the BROKEN ISLAND, then you will have sight of Calventura rocks.

From the Broken island to CALVENTURA ROCKS keep in 45 and 50 fathoms, which depth you will have close along the said rocks; but you must keep a good offing in the night, and frequently use the lead and line, as the currents are very deceitful and often shifting.

From Calventura rocks you must work up as high as the Island CHEDUBA: and it will be necessary to stand out to 50 fathoms, and into 30, till you come with the BROKEN ISLANDS.

When you get to the northward of these islands, you may stand in, to 15 fathoms, and off to 40, keeping in that depth until you are in the latitude of $20^{\circ} 15'$ North.

Then if you find the wind favourable, you may quit the coast, steering W. by N. and W. N. W. which course will keep you in 45 and 55 fathoms.

If it should be calm, and you find the current sets you out, you had best come to an anchor, and wait till you find the current or wind in your favour; but in case you should fall off to W. by S. or W. S. W. it will be necessary to put about and stand to the northward, taking great care not to lose soundings.

There is a SWATCH, about 2° off the land, where there is no soundings with 200 fathoms line, which is about 2 or $2\frac{1}{2}$ miles, in some places. (See p. 324.) After you are over
that

that swatch you will have soundings upon SAGOR SAND from 10 to 16 fathoms, hard sand, then it is requisite you should keep from 12 to 20 fathoms. Running along, in that depth, you will alter your soundings from hard sand to soft sticky mud, which is the swatch between Sagor and the Eastern Sea-reef; you will cross the tail of the EASTERN SEA-REEF, where you will have soundings from 10 to 12 fathoms, hard sand, but no danger, for you will find all these soundings pretty smooth. Then from the Eastern Sea-reef to the WESTERN SEA-REEF, you will fall in a soft channel again, where you are to steer W. N. W. and N. W. by W. and that course will carry you to the sloops in BALLASORE ROAD. By observing your lead, the tail of the Western Sea-reef will be found in 10 or 12 fathoms, thence you fall into 15, 20, or perhaps 22 fathoms, soft ground, and these are the soundings of Ballasore road; from 15 to 13 fathoms you will be sure to see the sloops.

THE COAST OF PEGU (PEGOO), WITH THE COASTS OF MARTABAN AND TANASSERIM, &c.

THESE coasts are little known, and cannot be described with any detail. We have terminated our description of the coast of Ava to the eastward of Pagoda point, at Porean, the north west point of Porean island in the entrance of the Ava river, up which the English had a factory in 1758. This river is also called Perseen and Barseen river. Six leagues to the S. E. of Porean point lies TIGER'S POINT, which is high land; from this the coast extends 20 leagues E. by S. and East to BRAGU or BARAGU river and point, and then N. by E. above 30 leagues to the entrance of Sirian river: it is a continual low land covered with trees, and intersected with many channels of rivers forming a multitude of islands. The shallow banks with which it is encompassed, extend 2 leagues into the sea, and off Bragu point, about 3 leagues; you have from 3 to 4½ and 5 fathoms close to them, and 7, 8, or 9 abreast of Bragu. Upon the Coast of Pegu the perpendicular rise and fall of the water is from 15 to 21 feet, the tides running from 5 to 7 knots; the flood and the ebb 6 hours each, except at the overflowing season, when the ebb runs 8 or 9 hours, and the flood only 2 or 3. Off Porean island the rise is only 9 feet, and in the GULF OF MARTABAN, 15 leagues to the eastward of Sirian river it amounts to 21 and 24 feet, and that almost suddenly on the banks in the bottom of the gulf. We need not say that this gulf is very dangerous, and that ships bound to Sirian must be very attentive to the tides which set into it with great rapidity.

SIRIAN, or SIRIAM RIVER, called also the River of Pegu, is only the western branch by which the great river of that name discharges itself into the sea; it has a bar at its

entrance, with only $2\frac{1}{2}$ fathoms water on it: the eastern branch, which is also the most considerable, is called *Sittang River*, and falls into the Gulf of Martaban.

The town of MARTABAN, which belongs to Pegu, is situated about 20 leagues to the east of Sirian Bar, on the north side of a river whose westernmost point is easily known by its high land; the English sailors call this high land the *Martaban bills*, but the French give that name to the *Queckmy mountains*, which are 20 leagues to the southward of these, and can be seen at a greater distance.

From Martaban the coast runs to the South above 55 leagues to *Tavay River*, and thence, always in a southerly direction, above 100 leagues to the island of *Junkselon*. The Coast of TANASSERIM is supposed to begin at Tavay river, and to extend about 20 or 30 leagues southward of MERGUI: it is bordered with a great number of islands whose description, as far as they are known, will be given hereafter, as well as that of Junkselon, &c. in the directions for sailing to and from this coast.

THE ANDAMAN ISLANDS.

PREPARIS—THE COCOS—GREAT AND LITTLE ANDAMAN—
NARCONDAM—BARREN ISLAND—DANGERS NEAR THE ANDAMAN.

Extracted chiefly from Captain RITCHIE's Account.

THE Island PREPARIS is situated between the latitudes $14^{\circ} 48'$ and $14^{\circ} 52'$ * North, bearing from Diamond island at Negrais S. 35° W. distance 69 miles: its greatest length extends N. N. E. and S. S. W. 4 miles and something more, and it is not more than $\frac{1}{2}$ league broad any where; at its north end lie two small islets, called *Cow and Galf*, about which there is no breakers or any sign of shoal water. The east side of the island is pretty steep to, there being 7 fathoms water within a cable's length of the shore: but along the west side, and at the south end, there lies a great shelf of rocks extending a great way into the sea, so that the island is not approachable on those sides: many of these rocks are above water upon the reef, and one of them makes like a sail; on the west side there are also two small islands.

Preparis is a ridge of moderately high land swelling gradually towards the middle from all sides, and covered entirely with wood; it may be seen at the distance of 8 or 9 leagues in clear weather.—A few paces above the sea beach there is a pond of fine

* The middle of Preparis is placed in $14^{\circ} 57'$ by some other navigators.

fresh water very convenient for watering. The only inhabitants of the island are rats, squirrels, and monkeys.

There are two ledges of rocks which project into the sea, just at this watering pond, and the space between them is a fine sandy beach, where boats land very conveniently with casks to water; and the mark to find the watering place is just by the beach in that direction.

The Cocos or *Coco Islands*, lie 46 miles S. 17° W. from Prepara; there are two of them, the Great and the Little, which, in clear weather, may be descried 10 leagues off.

GREAT COCO, the northernmost, is about 5 miles long, 2 in breadth; and situated between $14^{\circ} 2'$ and $14^{\circ} 8'$ latitude North: its land is pretty high and hilly, and entirely covered with wood. At its north end there are two small islands, one called the *Table*, and the other to the westward of this, named the *Slipper*, on account of its appearance when it is viewed from the northward. There is likewise another small island at the south end, joined to it by a rocky reef, which the sea just covers at high water.—You anchor at the east side of Great Coco in 18 fathoms water, and opposite to a small island, called the *Rat*, or rather between it and a shoulder upon the large island, which forms a little deep bight: a considerable number of cocoa-trees grow along the beach, but no where else; nor is there any appearance of fresh water in that place; perhaps it might be had by digging pits, as some have done, upon these islands.

The LITTLE COCO, or southernmost island, bears S. 48° W. from the Great Coco, distance 8 miles, and is about $2\frac{1}{2}$ miles in length, and scarce 2 miles broad: the land is moderately high and covered with trees; there are here too some cocoa-nut trees, growing near the sea, but no where else; and monkeys and squirrels are numerous. Captain Morris, of the *Boscawen*, anchored in January 1763, about 3 miles off the north-west point of Little Coco. From the ship to the shore he found regular soundings decreasing to 10 fathoms, within a mile of the shore. They landed on the west side of the island, in a fine sandy bay, but found the rest all rocky; they could find no fresh water. Here are regular tides flowing N. N. E. and S. S. W.

The ANDAMAN ISLANDS comprehend Great and Little Andaman, and the Eastern Islands, which Mr. Ritchie calls *Archipelago of Andaman*.

GREAT ANDAMAN, between $11^{\circ} 20'$ and $13^{\circ} 35'$ latitude North, is about 45 leagues long from North to South, and its breadth from 6 to 10 and 11 leagues. Its north end lies about 22 miles S. S. W. from Little Coco. This end is surrounded with islands; between these and the main island there is a channel through which the French ship *Le Pondichery* sailed in her way to Pegu; but it is neither advisable nor useful to follow her example, this passage being full of shoals, rocks, &c. and exceedingly dangerous; the tide flows at 5 o'clock at each end of the Pondicherry channel.

Great Andaman is very little known; on the east side as well as on the west are seen mountains of a great height. All along the west side it is said you have good soundings,

at

at 4 leagues off the shore; but there is a dangerous shoal, which shall be described hereafter. The natives of this island are of a ferocious disposition, and said to be cannibals.

About 27 leagues from the north end, on the east side of the island, begin the ANDAMAN ARCHIPELAGO or the EASTERN ISLANDS, whose inhabitants, who go entirely naked, are perfectly black, with woolly heads like the African Coffres, and features much resembling those of the Malays; "nothing in the human shape, says Mr. Ritchie, can have a more wild appearance either in person or manners."

This Andaman Archipelago is separated from Great Andaman by a strait of 6 or 7 leagues in length, and about 3 or 4 leagues broad, except towards the middle, where there is a narrow, only 3 miles wide, in which the least water found was 8 fathoms; whereas you have from 25 to 17 in the north part of the straits, and from 30 to 40 fathoms in the part southward of the Narrows; it affords good ground for anchoring and security from every wind.

The land which forms the east side of this passage is so broken into islands and inlets, that it is almost impossible to describe it; the whole is more or less mountainous, presenting every where to the eye an impenetrable thicket.

On the west side of the strait, and for a great way to the southward of it, the body of Andaman is one continued lofty ridge of mountains, every where covered with wood, except where it is too steep for any thing to grow; and in such places it is a reddish earth, which every squall of wind and rain washes down more or less.

Mr. Ritchie named this channel DILIGENT STRAITS, "having reason," says he, "to believe no ship or vessel was ever in before;" but it seems that the Portuguese were acquainted with it many years ago. See the hydrographical journal of that gentleman published by Mr. Dalrymple, p. 54.

From the south part of the straits to the south-eastmost point of Andaman the distance is about 38 miles, the coast running S. by W. $\frac{1}{2}$ W. nearly. There is a passage between this end and an islet to the S. E. about one mile off: here the currents set strong to the eastward, and cause a very great rippling and foaming of the water, which might intimidate a stranger; but there is no danger, for you have no ground at 40 fathoms, till you are quite through the narrow, and near a league to the westward of it, when the depth is 15 to 20 fathoms, variously for 3 or 4 casts; and then you have regularly 13 fathoms, coarse white sand, in rounding the south end of Great Andaman, at a league distance.

About 10 miles N. W. by N. from the south-westmost end of Great Andaman, lies a pretty level island 3 or 4 miles long, not unlike Diamond Island at Negrais, and totally covered with trees; it is called the NORTHERN SENTINEL, from its position with respect to Duncan's passage, considered as a gate-way, and this as a sentry box. It is said that Captain John Lenox got some fresh water at this little island in 1783. To the southward

of it about 9 leagues lies another, but a great deal smaller, which they call the *Southern Sentinel*.

To the westward of Great Andaman there is a *BANK* which is described as a long shoal of coral rock, lying 10 leagues to the westward of the * high mountain on Great Andaman; you have $4\frac{1}{2}$ fathoms on it, and probably less. "My chief officer," says Captain *William Richardson*, "ran due West on it for 2 leagues in 6 to $4\frac{1}{2}$ fathoms; he supposes that to be its breadth, and that it runs lengthways North and South as the islands do: I have met with only three people who had soundings on it, and no part being above water, it has never been thought of."

The opening between Great Andaman to the North, and Little Andaman to the South, is generally called *DUNCAN'S PASSAGE*, but the true passage seems to lie, more properly, between *Round island*, the southernmost of the small islands which stretch 15 miles from Great Andaman, and *Flat island*, the northernmost of the islets called *The Twins*, or the *Two Brothers*, which are seen about 10 miles N. E. of Little Andaman. The channel is about 10 miles wide, with 25 fathoms water in the middle of it, rocky ground. You may pass also between the Two Brothers, and between the southernmost Brother and Little Andaman; but in this latter course you run the risk of meeting with dangerous ledges of rocks on which there are only 5 feet at low water.

Through the former channel, the *Ganges*, Captain *Duncan*, passed in his voyage to, and return from Manila, in August 1759, and January 1760. "This channel," says the captain, "is quite clear; no danger, but what is visible and above water; and the ground all through, sand, with small coral stones and shells. Ships bound through this channel ought to fall in with, and keep the weather shore on board, there being a strong current which sets with the wind in both Monsoons."

LITTLE ANDAMAN, to the South of Duncan's Channel, bears S. by W. from the body of Great Andaman, distance 9 or 10 leagues, and between the latitude $10^{\circ} 31'$ and $10^{\circ} 52'$ North. It is 7 leagues long, and about 5 broad; the land is low, and rises with an easy swell, towards the middle, or rather nearer the south end, and the whole is covered with woods. The west coast is very clear, with good soundings, and a bay in the middle of it; about 6 miles S. by W. from the south point of the west coast lies a small rocky patch with 7 and 8 fathoms close to it.

To the eastward of the north-east point of Great Andaman lies *NARCONDAM* island, in $13^{\circ} 25'$ latitude North; and according to Mr. *Ritchie* about 27 leagues N. 81° E. from the north-east point of Andaman. Narcondam is very small, and very high; its peak may be seen at a vast distance; on approaching it you perceive a little rock, joining almost its south point, and another larger, on the east side; it appears to be safe all round.

* Captain *Ritchie* places the north peak of the Saddle hill upon Andaman, in $13^{\circ} 10'$ north lat. obs. when it bore West.

This island serves for a land mark, from which all ships passing this way generally take a fresh departure.

BARREN ISLAND, which is still smaller than Narcondam, is called likewise *Monday Island*; and by the Portuguese *Ilha Alta* (high island); it lies 20 leagues S. by W. from Narcondam, and about the same distance from Andaman. There appears to be several dangers adjacent to this island; and among others a ROCKY BANK seen by Captain *Sbarvington* in the *Babar* country-ship; he had 4 fathoms on it, Barren island bearing N. N. W. 5 or 6 leagues.

Twenty miles (not allowing current) to the westward of Barren Island, in $11^{\circ} 7'$ or $11^{\circ} 12'$ North, according to Captain *William Justice* of the *Union*, lies a Rock, which has been seen by many ships. According to the report of the officer sent by the captain, it is a round rock, about 33 yards diameter, and at the distance of twice its length he had from $5\frac{1}{2}$ to 6 fathoms; and from $2\frac{1}{2}$ to 3 miles he found regular soundings, deepening each way, as he stood off, to 25 and 30 fathoms, and then no ground; as he deepened his water he had coral rock intermixed with sand, and farther out muddy ground. This rock is exceedingly dangerous, being not above 8 feet high, and the sea breaking over it continually; he tried the current and found it set 6 fathoms.

THE NICOBAR ISLANDS.

Chiefly from Captain RITCHIE.

THIS cluster of islands, called *Sambelong*, or "the Nine Islands," by the Malays, stretches from N. N. W. to S. S. E. pretty near 60 leagues, and contains seven principal islands, with eleven or twelve smaller ones. CAR-NICOBAR, the northernmost, bears from the south-west point of Little Andaman S. 27° E. distance 29 leagues, and between the latitudes $9^{\circ} 7'$ and $9^{\circ} 13'$ North. It extends in length North and South 6 miles, and in width about 5. It is a low and level island, perhaps not above 6 feet above the surface of the sea, but it is extremely fruitful; its borders produce cocoa-trees, and many other fruit trees without number; the middle of the island is only covered with long rich grass, where multitudes of hogs are bred. You find here plenty of oranges, citrons, lemons, limes, bananas, plantains, yams and sweet potatoes; they have likewise fowls, pigeons, and catch variety of wild fowl: all their animals are fed with cocoanuts, for they have no sort of grain. This island is clear all round, not having a single rock above or under water, and with good soundings every where.

From Carnicobar to TERESSA the second large island, is about 50 miles; between them lie two very small islands; one called *Batty malve*, which is an entire rock, scarce $1\frac{1}{2}$ mile in

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its greatest dimension, of a wedge-like form, pretty high at the west end, and sloping to the eastward; hence it has been named the *Quoin*. The other island bears the name of *Chowry*; it is low and level, not above 6 feet above the surface of the water, except the south-east corner, which is an immense rock rising perpendicular out of the sea, to a great height, above the top of all the trees in the island; it has the appearance of the crown of a hat with the flaps let down; the low land then resembling the flaps, and the rock, the crown of the hat; which has made the Portuguese give the name of *Sombreira* (the hat) to this island. On the north-east side there is a village with about 40 houses, abreast of which you may anchor in 20 or 30 fathoms, sandy ground.

TERRESSA lies 8 or 9 miles S. W. by S. from *Chowry*; it is of a circular shape, extending N. W. and S. E. and, reckoning the bending, is about 15 miles long; its greatest breadth is something more than 5 miles at the north-west end, but to the south-eastward, it is scarcely half as much; both ends of *Terressa* are high land, on which account, at a distance it appears like two islands.

BOMBOCKA, or *Pombock*, an island to the eastward, famous for its fair women, is separated from the south end of *Terressa* by a channel only 2 miles wide; it is an entire high mountain, rising steep out of the sea, and partly covered with wood; its summit is a sharp ridge, extending North and South, about half the length of the island, and from it, all sides slope regularly to the water's edge.

KATCHULL or *Tillongchool*, lies about 16 miles to the south-eastward of *Bombocka*; it is of a triangular form, each side having 9 or 10 miles in length. We are little acquainted with this island, which is entirely covered with wood. You may anchor on the north-west end of it in 25 fathoms, coarse sandy ground, off shore about 2 miles.

To the eastward of *Katchull*, between 4 and 5 miles, are the Islands of *Car-morta* and *Noncowry*, separated only by a narrow channel which makes one of the best harbours in the East Indies, called *NONCOWRY HARBOUR*: it is of very easy access, with a very good bank to anchor on, in case it is necessary to stop a night or tide, &c. the west channel is hazardous to go in, without a good leading wind, as it is narrow and has eddy tides, but is good to come out; the harbour is spacious, and will hold 40 sail of large ships: there is a strong current or tide in the entrances, but no tides in the bays or bights of the harbour; the west channel lies between two high steep lands, like a gateway; it is not more than 100 fathoms wide with 40 fathoms water in it. In the eastern entrance you have 5 fathoms the least water, before you come to the Narrows, and then it deepens to 8, 9, and 10, with a fine soft bottom. There are many shelves of rocks on the south side which are steep to, there being 5 or 6 fathoms close to the edge of them, and the water perfectly smooth in all weather. The depth of water in this harbour is various from 12 to 30 fathoms,

fathoms, the bottom soft and stiff ground. It flows here $\frac{1}{2}$ an hour past 9 o'clock, on full and change, and the rise of the water is 8 or 9 feet.

"Ships," says Captain *Phineas Hunt*, "can go in and out at all months of the year. At the changing of the Monsoons there are frequent tornadoes, which last seldom above an hour. The Danes have there a small settlement, which has been very unhealthy, owing, I think, to their not being in a good situation, and their ground not clear; but I imagine, if the trees were cut down and burnt, and the land cleared on an elevated situation, it would be healthy. They had vegetables in their gardens; but as there were not above 8 or 10 in the whole colony*, little could be done by them; and I do not understand it is as a national settlement; only a few Moravians from Tranquebar settled there, to convert the natives to christianity."

CAR-MORTA, or *Camorta*, the island to the North of the harbour, is an irregular broken land, about 16 miles long from North to South, and of various widths, none above 5 miles. Its north end is pretty flat, but about the harbour it is mountainous, particularly on the west side, where stands the principal village at the foot of a perpendicular ridge.

"Car-morta," says again Captain *Hunt*, "is mostly covered with trees and underwood; the trees are 3 or 4 sorts of the poon, very fit for masts and to build houses. There are several plains of pasturage 3 or 4 miles round; the soil is rich, as sugar-canes grow without cultivation, and it produces the finest yams in India; there are besides fine flavoured pine-apples, plantains, guavas, &c. Water is got in wells; but in the dry season it is not in plenty, owing to the small number of wells sunk by the natives. I do not know of any river in the island. You have there no tigers or dangerous beasts: but many snakes, and very few of them venomous."

NONCOWRY, or *Noncovery*, called also *Soury*, which gives name to the harbour, has the form of a triangle whose sides are about 4 miles in length; it affords the same fruits and roots, &c. as Car-morta, but is more covered with woods.

Along the east side of Car-morta lies the low and level island of TRINCUTTY, which is a continued orchard of beetle-nuts and cocoa-nut trees: the passage between the islands is shoal water, except at the south end.

TONLONGAR, or *Tillangchong*, about 8 miles long, is 10 miles to the North of Car-morta; it is a high rugged mountain, resembling the comb of a cock, and covered with trees; it has no other inhabitants than such as are banished thence from the other islands; its peak can be seen in clear weather at 12 leagues distance. There are many islets and rocks at the south end and west side of Tonlongar: on the east side you find no ground, with any length of line, at 10 fathoms from the shore. Between the

* The village where the missionaries reside at *Cross barbour*, (one of the bights) has now a few more settlers; they call it *Herman*, and hoist there the Danish flag.

southernmost islet and the north end of Camorta, there is a good channel for large ships.

To the southward of Noncowry Island are the two southernmost Nicobars; and these have retained among Europeans the appellation of *Sambelong Islands*; the northernmost is called Little or Northern Sambelong; the other, which is the largest of all the islands, is named Nicobar, or Great Sambelong; both are less known than any of these we have been describing.

Between Noncowry and Little Sambelong lies the *SOMBREIRO CHANNEL*, about 10 leagues wide; in that channel, 9 miles south of Katchull, lies a coral bank, about 2 miles broad with a depth of water from 47 fathoms on the west side, to 8, 9, 15, and 11 on the east edge, and 60 fathoms close to it: it was discovered by Captain Mackay in the *Albion*, 1770.

Little Sambelong is very mountainous, and woody all over; it appears steep on all sides, and is said to be very populous. Three small islands to the N. N. W. of it extend to about 10 miles into the Sombreiro channel.

NICOBAR, or GREAT SAMBELONG, is 9 or 10 leagues in length, and about 4 broad in the middle; its north part which is mountainous, can be seen 10 or 12 leagues off, and tapers into a point to the southward; it is separated from the other island by a channel from 3 to 6 miles wide, which is called *ST. GEORGE'S CHANNEL*; you have in it very violent currents, with many eddies, a sure sign of a rocky uneven bottom.

"This fine strait," says M. D'Après, "is 6 or 7 leagues long, lying E. N. E. and S. S. W. the larger ships may go through it without fear, if they keep mid-channel between both islands; at each end of this channel there is a small islet which you are to leave to the southward, either coming in, or going out: at the north point of the western islet, (Condul island), there is a rocky ledge which stretches $\frac{1}{4}$ a quarter of a league, and the passage between this islet and the Great Nicobar is too dangerous to be attempted: therefore you are to pass to the northward of it, and also of the other islet (Cabra island), that lies at the eastern entrance, on account of a reef which is perceived to the southward, and renders that part hazardous."

All along the west coast of Nicobar island, you have good soundings from 18, 22, 17, and 24 fathoms, 2 or 3 miles off shore; and then 26, 30, 22, 27, and 33, with an offing of 5 or 6 miles, coarse sand, shells, and rotten stones.

All the Nicobar islands, except the *Quoin*, with a few others of the smallest, are inhabited, and the natives are a quiet, honest, and harmless people.

We must not terminate this article without taking notice of a *Shoal* or *Bank* which is said to lie 70 miles to the eastward of Noncowry in 8° north latitude.

THE ACHEEN ISLANDS AND THEIR PASSAGES;

WITH DIRECTIONS FOR

SAILING FROM THE COAST OF COROMANDEL TO ACHEEN.

THESE islands properly belong to the Isle of Sumatra, but they are so connected by their several passages, with the navigating tracks of which we are now treating, that it is necessary to introduce them in this place, as well as the part of Sumatra adjacent to them.

PULO*, or POOLO RONDO, the northernmost of these islands, is one of the most important to navigators. It lies 20 leagues S. E. $\frac{1}{2}$ E. from the Great Nicobar, in 6° north latitude, and its longitude, observed by Captain *Huddart*, is $95^{\circ} 1'$ East of London. It is so called on account of its round form; and within $\frac{1}{4}$ of a league to the southward of it are 7 or 8 great rocks above water.

The time of departing from the Coast of Coromandel to go to Acheen is generally limited to the middle of August, or at the latest, the middle of September. When you are got out at sea, you have the winds from W. S. W. to S. W. of which you must take advantage, and make the Isle of Sumatra in 5° north latitude, that is to say, 5 or 6 leagues to the southward of King's Point (called also *Cape Acheen* or *Acheen Head*), which forms the west point of Acheen Road. Here you commonly meet with southerly winds, at this time of the year; so by this means you will be to the windward of the Surat Passage, which, though the narrowest, is the best, because you can anchor in it.

This voyage, if undertaken at the time prescribed, can be made in 10 days; but if delayed later, the uncertainty of the winds, and the calms, may make it longer.

As to the effect of the currents, it is seldom you find them setting to the northward, and their direction is oftener found towards the South. Several navigators have been mistaken, by being too confident of the currents running with the wind; it is safer to compute they set to the eastward; and either way to keep a good look out in time.

If you make the Coast of Sumatra in 4° latitude North you will see in land several high mountains, and a low land beneath, even and very woody, which continues to the shore. Four or 5 leagues from shore you have 50 fathoms, all the way good anchoring ground, and no danger about the coast. In sailing to the northward in $4^{\circ} 43'$ you perceive the mouth of a river wherein boats may enter; thence the coast is bordered

* *Pulo*, or *Puolo*, an island in the Malay tongue.

with many small islands, low and woody, which may be coasted safely; and $1\frac{1}{2}$ league off shore you have 26 fathoms, mud.

Opposite these small islands, in $4^{\circ} 55'$ latitude North there is a bank about 1 mile long, and 3 or 4 cables length broad, on which the *Lapwing*, Captain *Griffin*, anchored in December 1764; the least water was, mark under water, 3 fathoms, and the most 7 fathoms: there are 17 fathoms both within and without.

About 5 or 6 leagues to the S. E. of King's point, the low land is equally woody, but of less extent: and like that of the high mountains, very uneven and irregular near the shore. The soundings in this part vary continually, viz. sand mixed with mud,—gravel—and sometimes rocky; so that there is no anchoring here, unless in case of necessity. About a league from the land you have 35 fathoms.

KING'S POINT, in latitude $5^{\circ} 35'$ North, makes the south side of SURAT PASSAGE, which is bounded, on the opposite side, by the little islands called *Paolo Gomez*, *Stony Island*, and *Paolo Chinchin*. The point is not easily known from the S. W. because at this bearing it appears so contiguous to the Islands Gomez, Nancey, and Brasse, that no passage is perceived between them. In ranging the coast, there is, about 2 leagues to the southward of the Surat Passage, a bight near one league broad from one point to the other, which you will readily take for a strait; at its south-east point are two rocks above water, on which the sea breaks, and another again within the bight, like a ship at anchor without her masts. In the bight the land is low, stocked with trees, and fine sand along the shore. At the foot of the high mountains towards Acheen there appear three small hillocks. Half a league off the south-east point of this bight you have 17 fathoms, fine sand; and a little to the northward 16 and 15 fathoms: $\frac{1}{4}$ of a league off the north-west point, the same depth is found at half a gun-shot from the shore. Off this place you may perceive King's point, which appears like a great steep hill. POOLO GOMEZ then makes like two paps; its western point is very low, and at the extremity is seen a little island, from whence breakers extend about $\frac{1}{2}$ a league W. S. W. and about the same distance W. by S. of Poolo Gomez, is another rock on which the sea breaks very much: it is dangerous going between these two, and in all probability there is a communication from one to the other. To avoid those dangers keep King's point, which is safe, close on board, in 12, and 14 fathoms, red sand; and when you have doubled that point, the opening of the passage discovers itself. Continue on the starboard hand till you are got to the narrowest part; then keep mid-channel without fear, and you will soon be through.

In case of meeting with a contrary wind you had best anchor under King's point; and wait till the flood has made, which sets N. E. by E. and the ebb S. W. by W. at about $\frac{1}{2}$ flood, weigh, and lay the ship's head to the northward; so you will have the tide under your lee bow. Thus by backing and filling, you may not only get through the Surat Passage very safely, but also to the anchoring place.

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You sometimes meet likewise with a contrary tide, which runs very strong out of the Bay of Acheen; if you have not wind enough to stem it, anchor till it has slackened, before you get to the entrance.

"The Surat passage," says Captain *Thomas Forrest*, "is bold and safe for a ship to work through in either Monsoon. In the springs the tide runs 5 and 6 knots, but immediately to the southward or northward of this narrow pass (which being formed by two promontories has no length, and is about 80 fathoms in width) the tide slackens. I would advise, in working through, against the S. W. Monsoon to lay the ship's head to the main of Sumatra, with the main top-sail a-back, because the perpendicular rock is steep to, the shore of the opposite island not being so bold. In the passage and near it, the ground is foul.

"Having got through, the tide will favour the navigator past Poolo Gomez, between which and Sumatra, is a safe channel with good anchoring ground; the tide will also favour as far as SIDDH HARBOUR, (7 miles to the southward of King's point) if the ship is kept all the way pretty near the shore, where is good anchoring. Going into this harbour, the Sugar-loaf hill and the Slipper rock are remarkable: you may keep close to the slipper rock, and lie very safe in either Monsoon. Here wood and water may be had, and refreshments as at Acheen; bullocks much cheaper. From this with a fresh land-wind, a ship may stretch off, and get down the coast of Sumatra, where she will find the wind West, and N. W."

From Surat Passage the course is E. by N. 2 leagues to the ANCHORAGE OF ACHEEN; about $\frac{1}{2}$ a league from the Coast of Sumatra, there is a small island surrounded with breakers. You may anchor before the river in what depth you please; as there are always some ships in the road, you have no occasion for more particular directions. Half a league off shore you find 12 fathoms, and 7 about $\frac{1}{4}$ of a league.

The Second Passage to enter Acheen Bay is that called *Sedre* or CEDAR PASSAGE, between Gomez and Stony Island to the South, and POOLO NANCEY to the North. Though the Surat Passage is preferable, this however is less to be feared than some people imagine: there is nothing dangerous but the rocky bank which extends W. S. W. from Poolo Gomez, with the rock bearing W. by S. from the said island, both mentioned above; and another that stretches from Poolo Nancey about mid-channel.

Northward of Poolo Nancey lies POOLO BRASSE, or *Brassa*, to the North of which are 3 or 4 small islets, and off the main island are soundings 20 fathoms, sandy ground, where any ship may safely anchor out of the currents, and wait a shift of wind. Between Poolo Brasse and POOLO WAY, is the

BENGAL PASSAGE, 4 leagues wide, and preferable to either of the two described, for ships which are not bound to Acheen. The winds that generally blow between S. S. W. and South, do not always permit the sailing thence to the road of Acheen; and

as there is no anchoring there, on account of the great depth of water, if a calm should happen you are tossed about by the currents, which set to the north-eastward, and run a risk of not reaching Acheen. Several ships, having been horfed near Poolo Way, where there is no anchorage, were obliged to sail round about, and re-enter, after 15 days hinderance at the

MALACCA PASSAGE, which is so called because the ships which go from Acheen to Malacca generally pass through it. It is bounded on the N. W. by the south point of Poolo Way, and on the S. E. by that of Sumatra. You find here a little round islot, or rock above water, called *Poolo Bourro*, or *Malora*; but it is steep to, and the passage safe on all sides; it lies 3 leagues N. E. from Acheen Road.

N. N. W. 3 leagues from the north-west part of Poolo Way is Poolo Rondo, which has been described at the beginning.

ACHEEN or *Acheen* carries on a very considerable trade; ships come either from most parts of the Indies, particularly on account of the gold which they export in great quantity; the hazard of being paid is the only difficulty of this traffick. The town is situate upon a low ground, which continues from the foot of the mountains that are seen in land: *Acheen river* makes several islands through this plain, which is overflowed in the rainy season. The principal entrance of that river has a bar, over which small vessels of about 25 or 30 tons may pass at high water; but at low tide a boat or canoe can scarcely get over it. The Portuguese and English had each of them formerly a settlement at Acheen, which the perverse behaviour of the inhabitants obliged them to forsake.

The sea rises and falls 7 feet in the road, and it is high water at 9 o'clock, on the full and change; but the sea-breezes and rains make such alterations, that you cannot depend always on this rule. You are sheltered from the westerly Monsoon, which is the strongest, and blows from April to November; then the eastern Monsoon setting in brings with it more moderate winds, except uncommonly those from the N. W. which blow very violently, and oblige ships to have stout ground-tackle to withstand their fury.

Among the mountains which hereabouts cover the northern parts of Sumatra, there is one very high, that can be seen 20 leagues at sea; the French call it the *Queen's Mountain*.

Ships bound to Europe, which on their return are to stop on the Coast of Coromandel, should depart from Acheen by the 20th or 22d of December, in order to arrive on the coast in the beginning of January. Having made sail through the Bengal Passage, they shape a course toward the Great Nicobar, which lies 20 leagues N. W. $\frac{1}{2}$ W. from Poolo Rondo. We have already said that it may be seen 10 or 12 leagues at sea. There is no occasion to pass through St. George's Channel; it is sufficient to go to the southward of it, and when you have passed it, keep on the proper course for your intended port; it must be observed to make the land at this season to
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the northward of the port in order to get thither the easier and sooner: you must also have regard to the currents setting to the westward, which otherwise might occasion your falling in with the land sooner than you are aware of.

For ships whose business detains them longer at Acheen, and which seldom depart sooner than March or April, the course must be different. The South and S. S. W. winds which blow then in the Bay of Bengal, and the currents that set to the northward, require they should make the land to the southward of the place they are bound to.

REMARKS ON THE BIGHT OF COR-ANGRIA TO THE EASTWARD OF ACHEEN.

THE Bight of COR-ANGRIA, where the French ship *La Paix* anchored the 22d of October 1767, at half an hour after 6 in the evening, is $3\frac{1}{2}$ leagues broad from one point to the other. This bight is formed by POINT PEDRO to the East, which terminates in a very gentle slope, and is distinguished by the great trees with which it is covered, as well as the whole bight from one end to the other; these trees resemble yew-trees in the form of a pyramid. The east point has nothing remarkable; you only discover there the mountain called the *Elephant*, which, with the *Queen's Mountain*, seems to form two islots when both are seen at a distance from 15 to 20 leagues, S. by E.

The bight is very steep, and at 21 fathoms, you are only $\frac{1}{2}$ a league off shore; the ground is not so swampy as that of Acheen; and the beach, which is a white sand on which many country boats were lying, induces to believe that the rivers of this bight are of an easy access: there is no great surf but with the N. N. E. winds.

The west part of Point Pedro forms, with the mouth of Poterian river, the bight named by the natives *Gingan*, or *Gingien*, where the anchorage and the holding ground are both good; the ship *La Paix* anchored there in $10\frac{3}{4}$ fathoms, and remained all night; the following day at noon she went to anchor on $15\frac{1}{2}$ fathoms in the road of Acheen, comprised between Poterian river and King's point. From the anchorage The Queen's mountain bore E. 24° S. a tuft of trees at the entrance of Acheen river E. 25° S. The Golden mount 28° from South to East. The *West Elephant Mount*, which is situated at the bottom of the road of Acheen, S. W. Point Pedro E. N. E. *Gingan* river E. 11° N. Poterian river E. 4° S. King's point, on with the middle of Poolo Gomez, W. S. W.—All these bearings by compass.

INSTRUCTIONS FOR SAILING FROM MADRAS TO PEGU, IN THE LITTLE AND GREAT MONSOON.

IF you sail in the Little Monsoon, that is, by the 25th of April, it is requisite you should keep to the southward, because the last full or change of the moon in April, or the first full or change in May, you have generally blowing weather from that quarter; but if you find the wind to stand good at S. W. shape your course to go through the channel, which is between Great Andaman and Cocos islands, keeping as near Andaman as possible. As soon as you are through stand East or E. by S. if you can, and go within 1 league or 2 of Narcondam island; and when you are 12 leagues to the eastward of it, your passage is secure.

If you do not sail before the middle of May, the Monsoon is then set in, and you may keep between the latitudes of $13\frac{1}{2}$ and 14° ; do not stretch to the northward of 14° , but go through the said channel as above. At this time of the year, if your glass be true, and your log well kept, you will make the Andamans when you have run about 10° easting. When you are through the channel, steer East or E. by S. and when Narcondam island bears South, 2 or 3 leagues, you may steer E. N. E.—N. E. by E. or N. E. till you have made $2\frac{1}{2}$ degrees easting from the said island. For this run, be cautious to keep the log well, then steer North for SIRIAN BAR, and keep a good look out, for if you are 5 leagues to the eastward thereof, in clear weather, you will certainly see the high land of Martaban; and if you do not perceive it, you may conclude you are not so far to the eastward of the bar.

Ships that come on the Coast of Pegu, in this season, ought to be well provided with good anchors and cables, for should you be obliged to ride out, at full or change, the latter end of May, or the beginning of June, you will certainly ride very hard, being shoal water and very strong tides. If, on the springs, you chance to meet with dark dirty weather, ride it out in $8\frac{1}{2}$ or 9 fathoms; and when you would deal with the coast, do not venture, under 6 fathoms, till you see the land, and know whereabouts you are. If you meet with stiff soundings, mud or clay, in $6\frac{1}{2}$, $7\frac{1}{2}$, or 8 fathoms, then you may be assured you are to the eastward of the bar, for the westward is all soft ooze. These stiff soundings are the best marks in blowing weather, whether you are to the eastward or westward of the bar; all along which to the westward, the tides set to the north-eastward, or more easterly; whereas they set N. N. E. and N. by E. all along to the westward; if you happen then to fall into these latter tides way, you may depend upon it you are to the eastward of the bar; therefore come away to the eastward with the ebb, as soon as you can;

can; in these tides way you meet with the stiff soundings. I never knew any who were exact in running the before mentioned easting, but they fell in with the bar very well, not exceeding 4 or 5 miles on either side.

If you sail from Madras in the Great Monsoon, that is in the month of September, when you have made $11\frac{1}{2}$ deg. easting, and about the latitude of $13^{\circ} 40'$ you will see the land of Andaman. Some have made 13° easting, which I believe to be the fault either of the glass or log. After you are through the channel, follow, as near as you can, the directions before given, and take care not to fall to the westward of Bragu, or Baragu Point. When once you have anchoring ground, be sure to keep it (for if you lose it, you run a great risk of losing also your passage) and get into 7 or 8 fathoms, as you have opportunity; then sail along shore into $6\frac{1}{2}$ or 7 fathoms, keeping your lead going, at least twice a glass; and as soon as you find your water deepens a fathom, or thereabouts, you are the length of Sirian Bar, where is the deepest water along the coast.

Keep a good look-out for the marks of the bar, which are 5 or 6 palmira-trees, and aloes, to the westward of the river's mouth; but there are several on the eastern shore, and to the eastward of these the trees have smooth tops, and look like a wood.

Bring the palmira-trees, on the west side of the river (called the Western Grove, or the Elephant), N. W. $\frac{1}{2}$ W. and stand in N. N. E. and North for the bar; and as soon as you have the river's mouth open, stand in N. N. W. or more westerly, as you will find necessary; after you are over the bar, the river is wide enough. The best time for going over is at $\frac{1}{4}$ or $\frac{3}{4}$ flood, for then the tide sets N. N. E. and North, but the first of the flood, the tide makes to the eastward very strong. If it be clear weather, you may see the high land of Martaban when you are within the bar of Sirian.

About the meridian of the bar, in 9, 10, or 11 fathoms, the water will be very white and thick, and the soundings soft and oozy; but to the eastward of it the water is green, and the soundings blue mud, somewhat stiff.

It is high water on Sirian Bar, at full and change, at a $\frac{1}{4}$ past 3 o'clock.

**GENERAL DIRECTIONS FOR SAILING TO MERGUI,
WHEN YOU LEAVE THE COAST OF COROMANDEL,**

From the Beginning of August to the Middle of September.

From Monf. D'APRÈS.

THE winds, which, at this time of the year, generally blow from West to S. S. W. oblige you to direct your course to the southernmost of the islands south of Little Andaman: getting in time into the latitude of $10^{\circ} 10'$ North. If you pass this channel (Duncan's Passage) in that latitude, you must look out for the said island, and thence direct your course with more certainty towards the east coast, endeavouring to make the TORRES ISLANDS, situated about 20 leagues S. W. by S. from that of Tanasserim.

Though it is very rare, especially at this time of the year, to find a difference to the westward; yet it is prudent, when you have not seen Little Andaman, to run 30 leagues to the eastward of its computed distance, before you stand to the northward, lest, by some unforeseen mistake, you run upon this island in the night-time, when you reckon yourself past it: you may also go through Sombreiro Channel: but you will be enough to the windward in passing that of $10^{\circ} (10')$.

In crossing from Little Andaman, or from the Nicobar islands to the northward of Sombreiro Channel, to the Coast of Tanasserim, you sometimes arrive there sooner than you expect, by means of the currents which run to the N. E. but as you have soundings 12 or 14 leagues off these islands, along the coast of Tanasserim, it is easy to prevent the sad consequences that may happen by these errors in the night-time.

All these islands are very high, and may be seen, in fine weather, 14 or 15 leagues: that of Tanasserim, which you endeavour to make, when in the latitude of $12^{\circ} 30'$ appears, at first sight, in several hillocks, like islands, by reason of its unevenness; but on approaching it they are seen to join. To the northward and southward are several other islands of different sizes; but the most remarkable, and which makes Tanasserim easily known, is a round little island, high and steep, called the WESTERN CANISTER, about 2 or 3 leagues to the north-westward.

N. E. $\frac{1}{2}$ E. from this last you see the island CABOSSA, or *Cabozes*, which is of a middling size, extending from East to West; it is the height of those round about it; but not so regular as that of Tanasserim. The island Cabossa has a little island or rock to the northward

northward of it, which may be easily known coming from the southward, as there is no other to the northward, but seems to terminate this range of islands.

Having got sight of this last, you may pass it either to the northward or southward, leaving the Western Canister on the starboard side, standing to the eastward, in soundings from 30 to 35 fathoms. There are a great number of islands of different sizes round about.

When you are between these islands you must regard the tides, which flow $7\frac{1}{4}$ hours, or $\frac{1}{2}$ hour past 7 o'clock, at the full and change of the moon off Cabossa; but are very irregular, making their way through the different passages formed by these islands: it is therefore necessary to anchor while they are not favourable.

As soon as you have passed Cabossa, you may perceive, at 8 or 9 leagues distance, a small island almost round, called the **LITTLE CANISTER**: it is high, steep, and covered with trees, and very much like the Western Canister above mentioned. The difference between them is, that the north end of the Western Canister slopes more gradually than the southern one, and forms a sort of snout. You may sail either to the northward or southward of it, at what distance you think proper; for this island is very bold, and safe all round: then steer between the island **TAVAY** and **IRON** Island. The breadth of this channel is about 2 leagues, clear of danger: all the inconvenience is, that you cannot anchor there safely, on any emergency, having 60 or 80 fathoms, rocky ground. It may be easily avoided, either coming in or going out, taking care to anchor till the tides turn in your favour, according to which way you are going.

From Cabossa island to about $\frac{1}{2}$ of a league to the southward of the Little Canister, the depth diminishes gradually from 35 to 24 fathoms; but increases afterwards in the channel above mentioned. When the south-west part of Iron island bears S. E. by E. and the Little Canister W. N. W. 2 leagues, you will find 35 fathoms, small gravel mixed with mud; being the last convenient anchorage, to the westward, going through the passage between Tavay and Iron islands.

About 2 leagues N. $\frac{1}{2}$ W. of the Little Canister, lies an island of a middling size, called the **GREAT CANISTER**, whose land is high and very irregular.

The south part of Tavay island is formed by several little islands and rocks, steep to, and separated by very small channels. The north part of Iron island, which bears S. $\frac{1}{2}$ E. from this last, terminates also in a point, with rocks above water. You find at the foot of these rocks from 25 to 30 fathoms water. The tides meeting hereabouts occasion eddies and whirlpools, which have different directions. The best course is to keep at an equal distance from either shore.

From hence, **LONG ISLAND** bears E. by S. extending from North to South, along the edge of a bank of rocks under water, with which the Coast of Tanasserim, from the mouth of Tavay river to that of Mergui, is encompassed. Instead of nearing this island, you must, as soon as you have doubled the north point of Iron island, steer along its east coast,

at about 2 miles distance. In this channel you have 40, 25, 20, and 17 fathoms, sand and mud, as far as the entrance of KING'S ISLAND BAY, lying to the S. S. E. This bay is formed by the eastern coast of the island of this name, and the western coast of FIG, or PLANTAIN ISLAND.

One league N. N. E. from that point of KING'S ISLAND, which forms the entrance of the bay, there is a dangerous shoal, on which the French ship *le Lys* touched in 1724.

Between Iron island and the north part of King's island, there is a channel, through which you may also pass, which has the same defect as the other, having no anchorage, but in very deep water; therefore, prudence suggests you to avoid it, till the tides favour your getting through: so that when you come from the island Cabossa, if the tide fails, anchor as near to Iron island as convenient, to wait the beginning of the next flood.

From this last anchorage, to get into the channel, keep nearer Iron island than King's island, till you are past the islands or rocks to the northward of this last; the outermost island being very low, with a dangerous shelf; then leave Iron island to round that of the King.

This passage is longer, East and West, than that to the northward of Iron island, whose extent is not so perceivable, because that part of the island terminates in a point; whereas the southernmost part is about $\frac{1}{2}$ of a league broad: besides, you generally have calms to leeward of this island, during which you are exposed to the tides, which do not set always alike; some ships having been driven within a stone's throw of Iron island, and then back again, to and fro, by these eddies: and although the coast is very bold, even at this distance, yet there are no bad consequences to be feared: so that, upon the whole, the preference should be given to the north channel before mentioned.

DIRECTIONS FOR COMING INTO, AND GOING OUT OF KING'S ISLAND BAY.

THE going into this bay chiefly depends on the situation of the LYS SHOAL, which is a little chain of rocks under water, extending about a cable's length E. S. E. and W. N. W.; its summit, considered as the only danger, bears N. N. E. from the point on the north-easternmost side of King's island, which island forms the west side of the bay: it is $\frac{1}{2}$ a league distant from the nearest land. The sounding upon the shoalest part is 19 feet at high water, and only 9 feet at low water; at the same time the point on King's island and a small island were in one; and Panella islet was likewise in one with the highest part of the north west point of Fig island.

On the west side, the northernmost of the little islands between Iron and King's islands was open about the width of a ship's sail from the north point of King's island. Sailing from shoalest part towards the point on King's island, you have 6, 7, 10, and 12 fathoms;

thoms; and to the northward 7, 10, and 15. Again, towards Fig island the depth increases gradually from 6 to 7, and from 7 to 9 fathoms, rocky ground, for about a cable's length off *Panella*, which is a small islet on a bank of sand; on this islet is a cluster of trees, lying about a gun-shot from the north-west point of Fig island, with which at a distance it appears confounded. To the eastward, almost joining to the islet, is another sand-bank; and to the S. W. stretches a reef of rocks, part of which only appears at low water.

To enter King's island Bay, whether from the northward or westward, you must leave the north part of King's island a league to the southward, and stand to the eastward till you have opened the bay, and can see two small islands at the farther end of it; then you may enter, leaving the Lys shoal on the starboard, and *Panella* on the larboard. You may pass this last safely, provided care be taken of the reef of rocks above mentioned, which extends to the S. W. toward the bay. This is the more requisite, as that reef seldom breaking, you risk, by the turn of the tides, being hoisted upon the rocks very fast; nevertheless, as the passage between them is wide enough, you may very well keep clear of it.

As soon as you find you have passed the Lys shoal, steer westward and anchor under King's island, opposite a bay into which runs a stream of excellent water. The marks of this anchorage are, 1st, the point of King's island (which makes the entrance of the bay) North or N. by W. $\frac{1}{4}$ a league. 2dly, The north-west point of Fig island E. $\frac{1}{4}$ S. 3dly, Long island N. by E. $\frac{1}{4}$ E.

The sea rises and falls here 10 feet, and it is high water about $\frac{1}{2}$ past 9 o'clock, at the full and change. This island is inhabited, as most of the others are, and produces plenty of wood fit for ship-building; there are likewise a great number of tigers and snakes.

The bay is not very deep to the southward of the anchorage. There is a little channel, separating King's island from Fig island, which is only passable in country boats.

If by contrary winds, or change of the tides, you are obliged to enter King's island Bay, through the channel between the point on King's island, and the Lys shoal, which is at most $\frac{1}{4}$ a league broad, you must keep along shore, at about $\frac{1}{2}$ or $\frac{1}{4}$ a mile distance from it; and take special care not to open the bay till you are that distance from it, because if you approach King's island, with the Point on it in one with the small island, both mentioned at the beginning, you run direct upon the shoal.

To go out of the Bay, the best track is to keep mid-channel, between the north-east point of King's island and *Panella*, without borrowing from the West, till you have passed the shoal, which you may be assured of when you have opened the second islet or rock between King's island and Iron island.

If you are obliged to go out by the Little Passage, you must keep along King's island, rounding the point which forms the bay, at about $\frac{1}{4}$ a mile distance.

DIRECTIONS FOR SAILING TO AND FROM MERGUI—JUNKSELON, &c.

By M. D'APRÈS.

AT MERGUI, or *Mergbi*, which is situated on the principal mouth of Tanasserim river, you meet with all necessary refreshments, except oxen, which the inhabitants dare not sell, since the metempsychosis, or the opinion of the transmigration of souls, has been introduced among them, and made a law of the state. Although idolatry is the established religion, the Christians obtain permission to profess theirs publicly, and those of the Roman persuasion have a church supplied by a priest of the foreign missions, under the title of apostolic vicar. There are also many Mahometans who are the principal traders, and have several ships which they send to different parts of India; the chief trade consists in elephants teeth, tutenague, and rice.

The French had a settlement in this port which has been abandoned many years ago.

When you are off King's island Bay, and would anchor before Mergui river, in $6\frac{1}{2}$ fathoms at low water, you must shape your course to sail about a league clear of the north-east point of Plantain island; and, having passed it, if you would keep mid-channel, in sailing towards the island Madramacan, which you will see to the S. S. E. you must mind to keep the Little Canister open with the south point of Iron island, and almost shut in by the north part of Plantain island. You find the bottom, sand, in 15, 13, 12, 9, and 8 fathoms. The best anchorage for large ships, is in 9 fathoms at high water, and $6\frac{1}{2}$ at low tide. The bearings for this place are, 1st, The north point of Plantain island in one with the south part of the Little Canister; and the south point of Iron island N. W. open about 10° from the Little Canister. 2dly, The northernmost part of Madramacan island, which makes the starboard side, going into the river of Mergui, S. 3° E. $1\frac{1}{2}$ league. 3dly, The larboard point of Mergui river S. by E. 2 leagues. The tide flows here almost North and South; that is, it is high water at $\frac{1}{2}$ an hour after 11 or 12 o'clock at noon, on the full and change days, when the water rises 15 feet.

It is reckoned about 2 leagues from this road to Mergui; middling vessels can go up the river, taking the pilots of the place to pass the bar, and anchor before the town in 5 fathoms water.

When you sail from the road without the bar, you must follow the same instructions as those given to sail thither; that is to say, to steer with the Little Canister just open from the north point of Plantain island, then coast this latter at $\frac{1}{2}$ of a league distance, and thence sail towards Iron island, keeping the Little Canister somewhat separate from its

its south point: this will bring you safe, till you are opposite King's island Bay, from whence you may go out, either to the northward or southward of Iron island, as shall be most convenient.

All that has been hitherto said, supposes a leading gale; but when it is contrary, whether sailing in or out, or to make advantage of the tides you are obliged to anchor, you must have new marks, to proportion the courses to the different breadths of the channel, in order to avoid the rocks on both sides, as follows.

From athwart the bay of King's island, as far as the little island about half-way from thence to Mergui, you may stand to the northward, till you see the south point of Iron island in one with the middle of the Little Canister, and to the southward till within a quarter of a league from Plantain, or Fig island, taking care not to be entangled among the islands.

When you have passed the little island above mentioned, between it and Madramacan, you may stand to the northward, till the south part of Iron island adjoins to the Little Canister; but the most certain mark is to leave a small space between them: without this caution, you inevitably run foul of the banks off the coast of Tanasserim, as happened to the ship *le Lys*, which narrowly escaped being lost here in 1724.

In standing to the southward, take care to put about before the north point of Fig island is in one with the south point of Iron island, leaving between them, at least, the breadth of a ship's course, in order to avoid a bank, which projects out on this side the island Madramacan.

The best advice that navigators can take, who sail in the N. E. Monsoon, or the middle of September, from Madras to Mergui, is to pass the channels to the northward of the Andaman islands, rather than the southern ones. The example of some ships, succeeding by the latter, ought in no wise to be depended upon always; for by so doing you expose yourself, if the passage is a little long, to the N. E. winds, which will prevent your getting to windward of Mergui. Several ships have found themselves in this plight, and having, in vain, strove against the winds and currents, have been obliged to winter at Junkselon. To avoid the like inconveniency, shape your course to go between the Cocos islands and the north point of Great Andaman, or between the former and Pre-paris island.

When you are between these islands, you may descry Narcondam, and, if the winds are westerly, safely steer for Cabossa island.

From Narcondam island to that of Cabossa, the westernmost of the islands of Mergui, the course is E. by S. distance 67 leagues. As soon as you have lost sight of the former, you get soundings on the coast of Tanasserim, in 60 fathoms; and when you have made the island Cabossa, you may conform yourself to the foregoing directions for sailing to Mergui.

When you are within sight of the Cocos, Andaman, or Preparis islands, if the winds blow northerly, the surest way not to miss Mergui, is to make the Mossos or Moscos Islands in $13^{\circ} 47'$ latitude; they may be seen 10 or 12 leagues at sea. The southernmost bears W. N. W. of Tavay point, which forms the west side of the river so called. From this point, the coast, which extends North, as far as $16^{\circ} 30'$ is bordered with islands pretty clear of danger, and where, it is said, are convenient places for anchoring. The southernmost are those of Mossos above mentioned.

S. by E. of these islands, in $13^{\circ} 6'$ lies the north point of TAVAY ISLAND, between which and the main, there is an exceeding fine channel, through which you may sail to go to Mergui. It is surrounded on the east side by a bank, the edge whereof lies North and South, encompassing all this part of the Coast of Tanasserim, as far as the river Calouan, or Goulpia, near Mergui.

When you have brought the Moscos islands to bear North, and are desirous of passing this channel, steer S. by E. in soundings of mud, and unequal depth, as 35, 30, 25, 20, and 15 fathoms, then 35 and 25, to within $1\frac{1}{2}$ league of the north point of Tavay island; it is best to keep nearer the east coast of this island than the bank above mentioned, because there is less water about it. On the side of Tavay island are 4 little isles, which you may coast, leaving them to the starboard. You have from 30 to 25 fathoms between the north point of Tavay island and these rocks; but this depth decreases after they are passed. The tides flow here S. E. and N. W. or at 9 o'clock: the sea rises and falls 15 feet.

The south part of Tavay is a number of islands, separated by small channels or arms of the sea, which are imperceptible in coming from the northward; so that it appears contiguous and united. On the east side is the little round island, called the Canister; it is on the bank, and points out its edge on that side, as Long island does about 2 leagues to the southward.

Off this latter you may see King's island Bay to the southward, towards which you must sail, conforming to the foregoing directions, whether you will go into it, or anchor before Mergui river.

In coming from the northward, you sail to the westward of Tavay island, between several great steep rocks situate along this coast, and the island called the Great Canister; from hence you direct your course to go between the north point of Iron island, and the south part of Tavay, as before directed.

If you pass the N. E. Monsoon at Mergui, on account of its being too early for the Coast of Coromandel, your departure should be made about the 15th or 20th of December, in order to arrive there about the beginning of January, when that coast is safe.

If you sail whilst the N. E. Monsoon is in its height, direct your course from Cabossa island, to pass between the islands Preparis and Cocos, or between these last and the north point of Great Andaman; thence you may sail towards the Coast of Coromandel, taking care

care always to make the land to the northward of the place you are bound to. This precaution is the more necessary, because, if you fall in to the southward, you will find it difficult beating up against winds and currents, which are then contrary.

It sometimes happens, that the ships trading to Mergui are not always ready to sail in January; therefore, if necessity obliges them to stay till the middle of February, it will be best going through the channel to the southward of Little Andaman, making advantage of the southerly winds, which at this time blow out in the Bay of Bengal, more than the northerly ones.

The whole Coast of Tanasserim, from Mergui, as far as latitude $10^{\circ} 50'$ North, is bordered with a number of islands of different sizes, which form several channels, that are only passable for the small country ships. And 6 or 7 leagues to the southward of Mergui is another mouth of Tanasserim river, from whence to the southward the coast is encompassed with a bank, containing also many isles and islets between which the little country vessels go to Bangry and Junkselon. The largest and most considerable of these islands is called *Omell*, which extends 9 leagues from North to South, its north-east part nearly adjoining to the above mentioned bank.

Beyond Omell island, they say the coast is navigable, even for large ships, as far as Junkselon, provided care be taken of a bank, situate between the continent and the bordering islands. Although this bank is 3 leagues distant from the former, and thereby affords a good passage between them, it seems better to sail without all, where every danger is avoided.

The body of JUNKSELON island lies in latitude $8^{\circ} 15'$ North; its shape is irregular, extending from North to South about 18 leagues. On the east side of it are very good harbours which you may safely put into; provisions and refreshments being very plentiful, and the inhabitants sociable.

THE STRAITS OF MALACCA, OR MALACK.

POOLO PINANG, OR PRINCE OF WALES'S ISLAND.

SEVENTEEN or 18 leagues from the south-west point of Junkselon are the SEVOR ISLANDS, consisting of a principal island surrounded with many small ones, and the whole of them little known. And about 45 leagues south-eastward from Junkselon you find the port of Queda.

About 15 leagues south of the port of Queda lies the island heretofore called POOLO PINANG, and now PRINCE OF WALES'S ISLAND. This island was given to Captain
Light,

Light, by the king of Queda, and possession taken by that officer for the use of the East India Company, August 11th, 1786. It is about 11 miles long, North and South, and from 5 to 7 miles broad: the middle is high, its south part low, and upon its north point is a round hillock, which makes it easily known. The western coast forms a bight with a sandy shore; near the south point of this bight, there is an islet upon which may be found very good water. There are also some rivulets of fresh water on the island, with a Fort on the north-eastmost point.

There is a good channel between Prince of Wales's island and the Malaya coast, with a good depth of water. The channel to the southward of it, between *Poole Jeraga*, and *Poole Kio*, has been lately surveyed, and completely buoyed. In consequence, ships drawing 24 feet may with great safety go in and out, without the assistance of a pilot, as Captain *Light*, the Governor, has placed beacons of 18 inches diameter, with different coloured flags, to point out the channel. The discovery of this passage will prove highly advantageous to the infant colony of Prince of Wales's island, as it will encourage many ships to touch there, bound to China, late in the season; which they formerly were cautious of doing, from the circumstance of the N. W. winds setting in in the month of August; and they were generally 3 or 4 days beating round the north end of the island, which distance they may now run down in an hour.

INSTRUCTIONS FOR SAILING TO THE STRAITS OF MALACCA, FROM THE WESTWARD, IN EITHER MONSOON.

QUEDA—SALANGORE, &c.

IF you are bound to these straits, in the westerly Monsoon, when the winds, throughout the Bay of Bengal, blow from the southward, and the currents set to the northward, the best course you can take, whether from the Coast of Coromandel, or from Dondra head, in the isle of Ceylon, is to make the islands of Acheen; keeping, as much as possible, in $5^{\circ} 30'$ or $40'$ north latitude if you intend to put in at Acheen. But otherwise you must pass by the little islands to the northward of POOLO BRASSE, and continue your course through the channel, between the north point of POOLO WAY, and the rocks $\frac{1}{2}$ of a league to the southward of POOLO RONDO.

Having doubled Poole Way you proceed towards that part of the Coast of Sumatra, between Point Pedro and DIAMOND POINT. During this season it is not common to find settled weather, so as to make a direct course. The wind hereabouts is very variable, and frequently blows from S. S. E. to E. S. E. in violent squalls, which, by
withstanding

withstanding their fury, would drive you ashore, especially in a large ship. You ought to be greatly on your guard through this whole strait, and anchor in time, to avoid being driven off the coast, and if it should happen, so as to be able to recover it easily. Sometimes also it is necessary, to avoid particular danger, to keep off the coast when the wind blows upon it.

The passage from the Coast of Coromandel, to the Straits of Malacca, in the easterly Monsoon, is liable to great difficulties, especially from Madras, or other places more to the southward; because the winds throughout the whole Bay of Bengal, then blowing from N. N. E. to E. N. E. and the currents running to the southward, this contrariety affords no hopes of success. But for those who sail from Masulipatam, or any other part of that coast more to the northward, or from Bengal, the following directions are particularly adapted; they may likewise be useful to ships that are bound to the straits from Dondra head, or Madras, about the end of the western Monsoon; the calms and shuffling winds must at this time retard their arrival on the east coast of the bay, which they cannot reach before the setting of the easterly Monsoon; if they conform to the following instructions, they will shorten their passage, and render it more safe.

Their track from the shoals off the mouth of the Ganges, is to make the western coast of Great Negrais, and if, by any unforeseen error in their reckoning, they should fall with the land to the northward, they must have a care of the Buffaloes, (see p. 330). When they are within sight of Negrais island, it will be necessary to keep close along the west coast, to luff up to Pagoda point, and then bear away so as to pass to the southward of Diamond island, and avoid the Drowned island: you have an account of this passage in p. 331.

To make the most advantage of the wind, and shun the effect of the currents, which set to the westward, on leaving Diamond island endeavour to make the islands Cabossa, Tanasserim, or those of TORRES, which are the westernmost of the Mergai Archipelago. These islands are very high, and may be seen far off at sea; besides by the soundings about them, you may form a judgment of their distance.

From these islands, steer S. by E. to go clear of those along the south part of the Coast of Tanasserim; they are clear and without danger, or at least any that is visible.

In $8^{\circ} 30'$ north latitude and 13 or 14 leagues East of Junkfelon, lie the islands of SEVOR, which may be seen 6 or 7 leagues off: you leave them on the larboard, and thence steer S. E. to make POOLO BOUTON, which lies 26 or 27 leagues S. S. E. from the south point of Junkfelon, and in the latitude $6^{\circ} 35'$ North. Poolo Bouton is not the only island to be seen, all the Coast of Queda being encompassed with several others of different sizes, and very high. Those of Troctou, Loucava, and Ladda, are the most considerable, and to the eastward of this last lies the port of Queda, where they trade for tutenague and elephants teeth.

From

From Poolo Bouton to POOLO PERA, the course is S. by W. 15 or 16 leagues; this last island is round, steep to, covered with trees, and about $1\frac{1}{2}$ league in circumference; it is clear all round, and may be approached with safety: its situation almost in the middle of the entrance of the straits of Malacca, (being by itself, and out of sight of the coast, and the adjacent islands) makes it easily known, and it becomes a mark to the ships that come in, or go out of this strait. Round about Poolo Pera you have 60, 50, and 40 fathoms.

Should you be bound to the Road of Queda, you are to leave Poolo Pera 5 or 6 leagues to the southward, and sail to the East to get a sight of *Poolo-Ladda*, a very high island, which you leave on the north side, steering toward an islet called *Poolo Rat*, distant from it, 3 leagues to the southward; then you steer toward two other small islands or rocks, called *Pyers*, 4 leagues distant W. by S. from Queda river; ranging them along to the North or the South, you come to anchor in 6 fathoms, ooze, one league from the river's entrance, which is then bearing E. by N. and a huge mountain on the north side, called the Elephant N. E. 2 or 3° N. the principal of the *Pyers* W. by S. 4° W. *Poolo Biddan* S. S. E. Prince of Wales's Island, South; and the white fort at the entrance of Queda river E. N. E. 2° E. It is high water there at 10 o'clock on full and change days, and it rises 6 feet.

Having had sight of Poolo Pera, ships not bound to Queda, leave the island to the starboard, and stand towards PRINCE OF WALES'S ISLAND, (Poolo Pinang) bearing E. S. E. about 21 leagues from the former.

From Poolo Pinang S. 26° E. 24 leagues, lies Poolo Dinding; those who sail from one to the other, with a fair wind, should keep in 20, or 25 fathoms; but if you are obliged to turn it, take care not to come under 10 fathoms, mud. To the southward of this POOLO SAMBELONG, or the *Nine Isles*, extend about 5 leagues from N. W. to S. W.; their land is high, and forms 3 or 4 mountains, which appear contiguous.

POOLO DINDING has at most 2 leagues from North to South; its land is high, and rises in 3 or 4 contiguous hills. The Dutch have there a fort on the east side; and over against the island is Perach harbour.

To the westward of the Sambelongs, at 8 leagues distance, is a little sugar loaf island, covered with trees, called POOLO JARRA, which may be seen 7 or 8 leagues off; you may pass between it and the Sambelongs, in 25, 28, 30, 38, and 42 fathoms, mud, and the passage very safe.

Ships who are bound to SALANGORE must range along the Sambelongs nearer than Poolo Jarra, and being 3 leagues to the southward of the former, they will steer E. S. E. to approach the Malaya shore, along which they may coast in 7 fathoms water at $1\frac{1}{2}$ league distance as far as Caran, a low point which you double in 6 fathoms, ooze, 4 or 5 miles from the entrance of the river that is to bear E. by N. Caran point will then bear N. W.

N. W. and two small islots on the edge of the bank in the offing S. by E. $2\frac{1}{2}$ or 3 leagues distant.

When you weigh from Salangore to go to Malacca, you must steer, in sailing from the road, E. by N. to double the bank in the offing, from whence you sail to the S. S. W. in sight of the Arroas.

When you go to Malacca, without stopping at Salangore, being in mid-channel between the Sambelongs and Poolo Jarra, you are to steer S. by E. easterly, to get sight of the Arroas, which lie to the S. S. E. 3° E. distant 24 leagues from the latter. In coming from Poolo Jarra to the Arroas the depths are very unequal, you find them alternately from 35 to 40, 48, 42, and sometimes 50 fathoms; when you are sailing about the Arroas, if towards the East you should find yourself in 12 or 14 fathoms, which are on the edge of the bank, you must tack about immediately. (See the description of the Arroas, &c. in the section which is the third after this.)

It is high water in the road of Salangore at 5 o'clock $\frac{1}{2}$, on full and change days.

Those who sail from Masulipatam, or any other place on the Coasts of Golconda or Orissa, in the months of January or February, have no occasion to make Negrais; it is then sufficient to cross over to the eastern coast, between Preparis, and Cocos islands, or between these last and the north point of Great Andaman. From laying these islands, they must shape a course to get sight of Poolo Bouton or Poolo Pera, and follow the preceding directions.

As for those who sail from Dondra head, or Madras, to the straits of Malacca, about the end of the western Monsoon, they may make Little Andaman, going through the channel on the south side thereof, or that of Sombreiro, if they cannot reach the former; thence they sail towards the Coast of Queda, to fall in with Poolo Bouton or Poolo Pera as above.

Many reasons, observes M. *D'Après*, render the eastern coast of the Straits of Malacca preferable for navigation to the western coast; such as the situation of several places convenient for trade, the more regular course of the tides, chiefly a less steep bottom, and consequently better for anchoring, than on the Sumatra side. He remarks also, that in the whole extent of the Straits of Malacca, as far as the Governor's Straits, the ebb which sets to the N. W. is much more rapid, and of a longer duration than the flood that runs towards the S. E. This is the cause that at all times the straits are sooner passed in coming from the S. E. than from the N. W. even with the N. W. Monsoon. Therefore navigators ought to be attentive to all the circumstances which are favourable to their voyage; they must anchor, in case of a calm, as soon as they perceive the tide is against them; they are to avail themselves of every breeze, every squall, by the help of which they may stem the tide; or they must let their ship be carried by the current when they see it setting through the fair channel, and no danger in the way.

The same observation in favour of the Malaya coast, or eastern coast of the Straits of Sumatra, has been made by Mr. *Nichelson*. "It has been found by experience," says this gentleman, "that passages have generally been more expeditiously made on the Malay coast, which is less subject to calms, and where you have little or no current, but rather a tide which is alternately in your favour; where also you may anchor when the wind or tide is against you, and keep what you have got." Mr. *Nichelson* went through the Sombreiro channel into the straits; but he advises going to the southward of the Nicobar Islands, as the shorter and best cut.

INSTRUCTIONS FOR SAILING FROM DONDRA HEAD, TO PARCELAR HILL, IN THE STRAITS OF MALACCA.

By Captain THORP.

"FROM Dondra head, to the Nicobar islands, you will make $12^{\circ} 13'$ East. The great Nicobar may be seen in the latitude of $6^{\circ} 35'$, but the weather is generally thick. You have soundings not above 2 or 3 leagues off, viz. 60 fathoms at $2\frac{1}{2}$ leagues, 40 at $1\frac{1}{2}$ league, and 18 at $\frac{1}{2}$ mile, coral rocks.

From the Nicobars steer E. S. E. the great island bearing North about 50 leagues; it will bring you in sight of Poolo Gomez and Acheen Head. All along the Sumatra shore is deep water, for which reason, as soon as you have made any part of Sumatra, steer over E. by S. or E. by N. as the wind will permit, to get over to the eastward. In the latitude of $6^{\circ} 35'$ or $40'$ you will make several islands, some in the shape of slippers; run in till you can stoop with the stream anchor, for you frequently meet with a N. E. current. You must wait for the wind, which you generally have in the evening, and will find it tedious: but this shore is the best on account of a current setting right out, when you keep the Sumatra shore on board.

"OFF POOLO PINANG (Prince of Wales's island), the Dutch and Portuguese lay down a small rock in 20 feet water, but I never saw it nor minded it. As you go to the southward you will make the land shewing in deep bays.

"When you come up with the Sambelongs at 3 leagues, and you should want water, stand in for POOLO DINDING, which is a very secure place to anchor at, observing the following directions.

"When you are come within 2 leagues of the Sambelongs, steer in N. E. for Poolo Dinding, which will bear N. E. by N. and some high land that makes the bay on the east side of the island, N. E. by E. The Sambelongs from S. E. by S. to S. by E. 5 leagues, you will see a small rock lying in the passage; near which you may keep, if
you

you think proper, for there is 20 fathoms close to it; you may see Poolo Jarra, bearing S. W. $\frac{1}{2}$ W. 9 leagues.

" As you run N. E. and N. E. by E. just as you find the tides to set, you open the *Two Dindings*; luff close to the innermost, keeping near the bluff point of Dinding, for nearer the eastern shore than the islands, you will meet with shoal water and hard ground. When you haul about the point, which will be N. W. you will see a ruined Dutch fort, and several rocks which you may approach as near as you choose, there being 5 fathoms close to them. You will soon find out the watering place, when you go to this fort. From the small rock before mentioned to Poolo Dinding, you will meet with a few casts of irregular soundings, from 15 to 8 fathoms, and deepening again, but as you run farther in, your soundings are regular.

" When you run out, and get clear of the Sambelongs, steer over for the ARROAS, and keep within 4 leagues of them: for if you are at a greater distance, your soundings, if regular, will be upon the *North Sand*. Keep the Arroas in sight, or 2 or 3 leagues off, until you get the round one W. by N. then PARCELAR HILL will bear to the northward of East, and your soundings will be upon the *South Sand*, where you must keep them; for if you get the hill to the southward of East, and discern the trees on the low land, you will perhaps meet with a rocky place $\frac{1}{2}$ mile in length, and having no more than $2\frac{1}{2}$ fathoms.

DIRECTIONS FOR SAILING

FROM MADRAS TO THE STRAITS OF MALACCA.

By Captain RICHARD RAWLINS.

" FROM Madras to the southernmost of the *Nicobar Islands*, in the latitude of $6^{\circ} 47'$ North the course is S. 64° E. dist. 900 miles; M. dist. $13^{\circ} 30'$ East; thence to *Poolo Pera* in $5^{\circ} 50'$ latitude the course is E. by S. 290 miles; M. dist. 5° .—To *Poolo Pinang* (Prince of Wales's island) in latitude $5^{\circ} 30'$ the course is E. S. E. dist. 64 miles; M. dist. $1^{\circ} 8'$. You may sail within 2 leagues of the shore from Poolo Pinang to *Poolo Sambelong* S. S. E. and S. E. by E. about 100 miles; keep within 3 leagues; the tide sets N. W. and S. E.—From Poolo Sambelong to the entrance between the Sands, the course is S. E. by E. 40 miles; then you will have layed the Sambelongs, and got sight of the tuft of trees E. by S. keep 3 or 4 leagues off shore, and bring *Poolo Parcelar* E. S. E. and steer in for it. The best judgment is by the lead, when you have made the latitude of $3^{\circ} 6'$ North, the tuft of trees N. E. 5 leagues, the

two rocks on the larboard side East, 3 leagues, Parcelar S. E. 6 leagues; the sea breaking on the starboard Sand W. S. W. 2 leagues, and at a distance from the shore 3 leagues. Keep as near the edge of the Off-sand, as you may see the breakings, but if you come too near, and your soundings should be sand, haul in. When you are up with the land, you will perceive the sea breaking on the starboard side, and then you are abreast of the Head-sand on the larboard, which has 2 fathoms at high water. If it be tide of ebb, steer S. S. E. if flood, steer South, but do not come within 3 leagues of the southward Sand. After you are past the Sand abreast the river, 3 leagues off shore, you will meet with unequal soundings. When Parcelar Hill bore E. $\frac{1}{2}$ S. we deepened from 16 fathoms, ooze, to 7 fathoms, sand, and near the shore; we hauled off, and in a glass's time had 19 fathoms, ooze; then steered S. E. by E. from 22 to 28 fathoms. Small ships, and few of them bound to Salangore, pass in the inner channel.—*Poolo Parcelar* bears from the Arroas E. $\frac{1}{2}$ S. 20 leagues; they are easily seen together, but when you lay the latter, you begin to enter the Sand, and it is proper to bring Parcelar E. by S. $\frac{1}{2}$ S. edging to the southward, that when you come within 8 leagues thereof, it may bear E. by N. or E. $\frac{1}{2}$ N. left you should run on the North Sand, where there are but 2 fathoms; between the Sands it is steep to, with uneven soundings.

"It is high water at 5 o'clock, full and change; the tide sets S. E. by S. and N. W. by N. 2 miles *per* hour; it ebbs 7 hours, and flows 5."

DIRECTIONS FOR SAILING ALONG

THE EASTERN COAST OF SUMATRA TO PARCELAR HILL.

POOLO VARELLA—THE ARROAS—NORTH AND SOUTH SANDS, &c.

PPOINT PEDRO, the north-east point of Acheen road, and *Tanjong Goere*, or DIAMOND POINT, lie E. by S. or E. S. E. and W. by N. or W. N. W. from each other, at the distance of 40 or 42 leagues. The whole Coast of Sumatra between these two points, is very high land up in the country, with some low land by the sea-side. When you are half-way, you must not, if possible, keep above 3 or 4 leagues off shore, in soundings of 25 or 30 fathoms, so as to be able to anchor in case of a calm, or contrary tide, for you often meet with currents setting to the northward with great rapidity. We must observe that many navigators assert that you cannot find the above soundings within less than 3 or 4 miles from the shore, which proves how deceiving is the distance of such a high land.

Before

Before you come to Diamond point there is a large mountain called the *Elephant*, which is distant from it 9 leagues, some say 14, towards the South. The point is low, and has at its extremity two separate clumps of trees which appear at a distance like two islets; the smallest, being the nearest to the point, lies in $5^{\circ} 21'$ north latitude.

As Diamond point is encompassed with dangers, you must not approach it nearer than $3\frac{1}{2}$ or 4 leagues. From hence the Coast of Sumatra extends S. E. by S. and has no other elevation but that of the trees with which it is covered. When Diamond point is bearing W. N. W. 5° W. distance 4 leagues, the land perceived to the S. E. by S. and S. S. E. appear like a gunner's quoin a little flattened, and the nearest land to the S. W. by S. at 2 small leagues forms the entrance of a river; you have there 38 fathoms, ooze with some sand. The soundings, 2 or 3 leagues off at sea, are very unequal, which might intimidate those who expect regular depths, proportional to their distance from the coast; at 5 leagues they find 35 and 30 fathoms, and in some parts only 25 and 20. All the coast in going toward the South is low and woody, and the depth begins only to decrease at the distance of 4 leagues off shore, when you approach Poolo Varella, which lies 46 leagues S. E. 3° E. from Diamond point.

Between these two places the flood runs S. E. by S. and is much less rapid and of less duration than the ebb which sets to the N. W. by N. Captain *Mackmouth* has observed that from Pedro point to Diamond point there is generally a N. W. current, especially when the wind blows fresh at West; but that at Diamond point the tides begin, and it flows there, at full and change, N. E. by N. or $\frac{1}{4}$ after 2 o'clock: whereas the ebb sets out much longer and stronger to the N. W. than the flood to the S. E. This accounts for the contrary tides, mentioned here above, as well as for the currents often met setting with great velocity to the northward.

POOLO VARELLA, (in the old Charts *Poolo Verura*) lies in $3^{\circ} 48'$ latitude North, 6 or 7 leagues from the shore; and may have about 2 leagues in circumference; it is high, woody, very clear and bold, excepting some sandy bays, the largest of which is seen to the S. E. you may anchor before this island in 12 fathoms; and in 18, a mile off shore, on its south side in a small cove where you may fill water, which runs down a hill into a small well, but very slow. Some ships have taken turtle at this island, in the night-time; and the Sumatra fishermen frequent it to dry their nets. There is a little rock or islet off the north-west point, and another to the southward.

To make advantage of the wind you generally pass between Poolo Varella and the coast of Sumatra. There is no danger in sailing between them, as the bank marked in the Charts has 8 or 9 fathoms water on it; but there are others when you approach the coast nearer than 3 leagues, so that it is necessary to keep sounding: these are, a bank with 7 fathoms, grey sand, when the island is bearing S. S. E. 3 leagues; and

and which deepens gradually towards it from 10 to 15 fathoms; another shoal to the N. E. 8 miles off the north-west of the island, with only 2 fathoms; you may see its breakers, and are then abreast of it, when the island bears S. by E. 3 leagues. There is also a bank, from which Poolo Varella bears from E. by S. to E. S. E. 9 or 10 leagues, whereon you find 9 or 10 fathoms, 4 leagues from the Sumatra shore.

Eighteen leagues E. $\frac{1}{2}$ N. from Poolo Varella you meet with POOLO JARRA, the small Sugar-loaf island already mentioned, and steep to, which may be seen 7 or 8 leagues off.

When you have passed Poolo Varella, steer toward the TWO BROTHERS, which are two islets bearing N. N. E. and S. S. W. about 2 leagues from each other. The northernmost (Poolo Quandan) is about 3 miles round, and lies S. E. by S. 9 leagues from Poolo Varella; the southernmost (Poolo Salanama) is a little larger; you pass to the eastward of these islets, near which you have 29 or 30 fathoms. There is no need to pass between them and Sumatra; besides it is reported there is shoal water.

From the Two Brothers ships that go to Malacca shape their course toward the ARROAS or AROO ISLANDS, E. S. E. about 22 leagues; these islands are in two clusters, which consist of several islets and rocks near each other, and covered with high trees which make them perceivable 8 or 9 leagues off; they lie in $3^{\circ} 50'$ latitude North, and each cluster is named after the two most remarkable islets among them, viz. the ROUND ARROA or Poolo Jamar, which is the easternmost, and the GREAT or LONG ARROA, about $3\frac{1}{2}$ leagues in circumference, a low and flat island, which is the westernmost as well as the farthest to the North. Round Arroa, the leading mark for the channel between the North and South Sands is very small, and has a tuft of trees on each side: to the N. E. of it about 4 miles, there is a remarkable rock with breakers, which is not to be seen far at high water; and another equally remarkable lies N. E. from the Long Arroa. A rocky bank even with the water's edge is said to lie N. W. by W. from the same Arroa, at 4 leagues, and according to others, 10 leagues distance. You must come no nearer the Arroas than $1\frac{1}{2}$ league, lest the ebb tide should horse you among them and into dangers. There is water enough all round, but the depth is very irregular, as well as the quality of the soundings.

The course of the tides here is, the flood S. E. by E. and the ebb N. W. by W.

As you are generally obliged to turn it hereabout, you must make the best advantage you can of the tides, and be very cautious, in standing toward the Malaya shore, to beware of the bank which lies to the N. E. of the Arroas; the shoalest part of which is covered with rocks whereon the sea breaks, sometimes at low water neap tides, and in very blowing weather; and the other parts have only 2 or 3 fathoms water. It may be considered as the most dangerous in these straits, and should not be approached nearer than 14 or 15 fathoms. Soundings of ooze are not always a certain proof of the distance from its edge, because there are (even upon this bank) soundings of that sort, clear and greenish,

greenish, which would deceive any one who should trust them. The south point of this bank forms the north side of the channel, through which you cross from the Arroas to Parcelar hill, for which reason it is called the NORTH SAND; at low water it has not above 9 feet water.

To the southward of the North Sand, on the other side of this same channel, is another called the SOUTH SAND, which, although the best to keep on, must be approached with the greatest caution. The soundings are very irregular and deceiving upon it; you will fall there from 23 to 16, 12, 9, 10, 7, and 6 fathoms; there are places at its north end which have but 3 fathoms, and you find no greater depth on some parts of the south end.

PARCELAR HILL, called by some *Poolo Parcelar*, lies in $2^{\circ} 50'$ latitude North, and as it rises upon a low land covered with trees, it appears the more conspicuous: it is the leading mark to pass between the banks of the Arroas to the Malaya shore; they reckon 14 leagues from this low land to Poolo Jamar, or Round Arroa.

The North Sand lies N. N. W. and S. S. E. and is about 9 or 10 leagues long. Its south part, which they call the North Sand Head, to distinguish it from that toward the North, lies E. N. E. 3° E. about 8 leagues from Round Arroa, and W. by N. 6 or 7 leagues from the low land which projects to the westward of Parcelar hill: also the northern part of the South Sand bank is bearing E. 7° S. 7 or 8 leagues from the said low land. The extent of this latter bank is S. E. by E. and N. W. by W. about 12 leagues. The passage between the two banks is reckoned $3\frac{1}{2}$ leagues broad, and the bottom very uneven, from 30 to 8 fathoms.

In the middle of the channel between the North and South Sands, there is a *sand bank*, with only $2\frac{1}{2}$ or 3 fathoms, hard and shining ground, which makes it very dangerous. When Parcelar hill remains to the E. 3° S. and you begin to see the great trees which are upon the low land at the foot of this hill, and Round Arroa is bearing W. $9^{\circ} 30'$ N. there are also two other banks of very hard ground in the channel, but as they have from 9 to 8 fathoms water, you have nothing to fear from them: the westernmost of these lies between the ends of the North and South Sands.

The tides are very strong between the North and South Sands and Parcelar hill. The flood sets, as it has been observed before, to the S. E. by E. and the ebb to the N. W. by W. It is high water, on full and change days, at $\frac{1}{2}$ after 7 o'clock, and the sea rises 8 or 9 feet.

When you cross from the Arroas to Parcelar hill, and are obliged to turn through the channel, with contrary winds, all navigators agree that you may bring Parcelar hill from E. 9° S. to E. 9° N. between the extremes of the North and South Sand heads; but if you are far enough to the eastward to lose sight from the deck, of Round Arroa, before you can discover the low land round Parcelar hill, then you must not go to the north part beyond the place where you have Parcelar hill bearing East: because if

Parcelar

Parcelar hill were to bear E. 3° S. then you should be upon the bank of $2\frac{1}{2}$ to 3 fathoms, above mentioned. You may nevertheless without danger, borrow more on the south side, in bringing Parcelar hill to bear E. $5^{\circ}\frac{1}{2}$ N. or else E. by N. when you are in sight of the low land. About this hill, or even farther to the North, it is necessary to have a boat sounding a-head, as it is generally practised in the channel.

When you have a favourable wind to cross from the Arroas, you must take great care of the tides, and steer so as to have Round Arroa bearing W. $5^{\circ}\frac{1}{2}$ S.; this is the best bearing, till you are in sight of the low land which surrounds Parcelar hill; then you may bring it to bear E. by N. or more northerly.

When you have doubled the North and South Sands, you must continue the course to the E. 5° S. to $1\frac{1}{2}$ league distance of the low land, then you may sail to Cape Rachado.

But a short instruction is required for going through the channel with an account of the different depths of water you meet with in crossing over.

Being off the Arroas, within 3 leagues of them, in 12 or 14 fathoms water, shape your course, with respect to the tides and winds, so as to keep Round Arroa from W. $\frac{1}{4}$ S. to W. $\frac{1}{4}$ S. till you get sight of Parcelar hill, as above directed; in this track you will have irregular soundings from 12 or 14 to 18, 20 and 25 fathoms; and when Round Arroa bears W. 8° S. 6 or 7 leagues, you will soon shoal your water to 12, 10, and 9 fathoms, when you are on the westernmost bank, and between the North and South Sand-heads.

Parcelar hill bearing off you East or E. $\frac{1}{2}$ S. the following bearings, according to Mr. *Nichelson*, are pretty good hereabout, viz. keep Parcelar hill due East, and you will have 9 and 10 fathoms on this westernmost bank, and soon deepen to 15, 18, 20, 22, and 23 fathoms; then you are between the westernmost and easternmost banks: the moment you begin to lose sight of Round Arroa upon deck, you are coming upon the easternmost bank, and will shoalen your water to 15, 12, 10, $9\frac{1}{2}$ fathoms; and when you can just see the trees on the low land about Parcelar hill, you are then abreast of the $2\frac{1}{2}$ fathoms bank. If Parcelar hill bears due East, it is then $1\frac{1}{2}$ or 2 miles to the northward of you; you are also clear of the South Sand, and may steer more southerly, so as to bring Parcelar hill E. by N. or even more northerly. By continuing your course to the eastward you will deepen your water again to 14, 16, 18, 20, 22, and 24 fathoms, ooze; and from 24 shoal again to 17 or 18 fathoms, 5 or 6 miles off the low land of Parcelar hill.

FROM

FROM PARCELAR HILL TO CAPE RACHADO AND MALACCA.

THEY reckon 13 leagues to the S. E. 3° E. from the low point stretching westward of Parcelar hill, to Cape Rachado. The coast between is low and woody, and forms a deep bight which you are not to enter. CAPE RACHADO is a high steep hill, cut perpendicularly towards the sea, and something like Mount Dilly, on the Coast of Malabar, only not so high: it projects to seaward in a long narrow point of land, which forms a deep bay on each side of it, with a small rock or islet near its extremity, and a rocky reef extending $\frac{1}{2}$ of a league towards the N. W. When you first descry Cape Rachado, coming from the north-westward, it makes like an island, on account of its situation on a low land, which for some time is not seen. About a league without the cape you may see the low and woody land of Sumatra from the deck, this being the narrowest part of the straits to the northward of Malacca.

About $3\frac{1}{2}$ or 4 leagues off this coast is the edge of the South Sand above mentioned, which lies S. E. by E. and N. W. by W. and bounds the passage on that side; if a foul wind should oblige you to turn Cape Rachado, you must be cautious of standing too near the coast on the one hand, and too near the South Sand on the other. From Parcelar hill to this cape, you must keep at least $1\frac{1}{2}$ league off shore, and even for safety farther off, to round the South Sand; and having doubled it, you steer a course to go about $\frac{1}{2}$ of a league without the cape. The soundings between it and Parcelar hill are from 15, 20, 25, 30 to 35, and in some places 40 fathoms; but in general very irregular, deepening and shoaling several fathoms at a cast; so that, in the night-time there is no judging by them where you are. The ground is all ooze, except about the middle of the channel.—Within 2 or 3 miles of the cape you will have 18, 22, 23, or 25 fathoms, and only 15, 16, or 18, at 2 or $2\frac{1}{2}$ leagues, the cape bearing E. N. E. Then 3 or $3\frac{1}{2}$ leagues to the westward of the said cape, you find 30 and 35 fathoms, from which it shoals suddenly to 10 fathoms hard ground, on the South Sand.

Here the tides run very strong, especially in the springs, flowing, on the full and change, N. W. and S. E. or 9 hours, the flood to the southward and the ebb to the northward.

About 2 leagues E. by S. from Cape Rachado is the mouth of the river Lingin, or Linguy, a place which produces much tutenague.

MALACCA lies 8 or 9 leagues E. S. E. from Cape Rachado.

From Cape Rachado, Malacca hills bear E. by S. $\frac{1}{2}$ S. and *Great Water Island* S. E. $\frac{1}{2}$ S. about 12 leagues. But the course to Malacca road is S. E. by E. about 9 leagues, the coast between forms several bays, and there are to be seen the mouths of several rivers; but you must not come too near the shore, on account of the rocks. You have soundings

of 16 to 20, and 25 fathoms, oozy ground, from 3 to 6 miles off shore: only when Cape Rachado bears N. W. 3 or 4 leagues, and about 4 or 5 miles off the coast; there is a hard bank of 13 fathoms, but within as well as without it you find 20 and 24. Also about midway between the latter cape and Malacca road, lies a rock above water, about a mile off shore, which cannot be reckoned dangerous, as no ships have occasion to come so near the shore.

After you have doubled Cape Rachado, you steer, as said above, S. E. by E. and soon discover the tower of Malacca, on this side of which you perceive a small islet, called *Fisher's Island*, or *Woody Island*, and range it along at 1 or 2 miles distance to go and anchor in the road of Malacca.

"There is no danger," says Mr. *Nichelson*, "going into Malacca road; if you are in the offing, in 20 or 23 fathoms, you shoalen your water gradually to 7 fathoms, as you run in for the road. I would not advise a great ship to go into less than $7\frac{1}{2}$ fathoms; for it shoals suddenly from 7 to 5 and 4 fathoms. Ships likewise should be still more careful not to go too far to the southward, or to the south-east part of the bay, for there the ground is foul and rocky, and shoalens suddenly from 8 to 3 fathoms. Off *Fisher's Island* there is no danger; I have foundered well about it, and found that a ship, upon occasion, might go within $\frac{1}{2}$ a mile of it, in 16 fathoms water, or have 10 fathoms within $\frac{1}{2}$ mile, and 20 within 1 mile of it. You may anchor in Malacca road from 13 to $7\frac{1}{2}$ fathoms, oozy ground, Malacca church on the north-west part of Mount Moar E. $27^{\circ} 30'$ N. the south-west part of Fisher's island W. $36^{\circ} 15'$ N. and the outermost of the Four Brothers, or Water islands, E. $50^{\circ} 20'$ S. distance from Malacca $1\frac{1}{2}$ mile.

"It flows in Malacca road, at full and change, S. S. E. and N. N. W. or 10 hours $\frac{1}{2}$. The flood runs E. S. E. and the ebb W. N. W. pretty strong tides. Half flood in the road is high water ashore, at $\frac{1}{2}$ ebb a ship cannot get into the river."

MALACCA, or *Malack*, lies in $2^{\circ} 12'$ latitude North, and $102^{\circ} 12'$ longitude East from London. This city was famous at the time of the discovery of the Indies, and the Portuguese conquered it in 1511; they were expelled in 1641, after a siege of 6 months, by the Dutch, who have kept it ever since, and Malacca is now the capital of their settlements in the Malaya Peninsula. Malacca gives its name to the straits, between the Coast of Malaya and the north-east part of Sumatra; through these straits they go from the North-indian sea to the Gulf of Siam, to China, to the Philippine and Molucca islands. The situation of this city, in the middle of the straits, renders it one of the greatest markets in India. Here the Dutch have a strong fort and a considerable settlement: their church stands upon a high hill in the middle of the garrison, and is always kept very white, which together with its situation makes it conspicuous at a great distance.

When

When you go ashore, with your boats, keep the fort well open to the starboard, till you have the river between the fort and houses; then steer directly in for the river, that being the deepest channel: the landing-place is on the larboard shore, as soon as you enter the river, about two stones throw from the bridge. On landing it is customary to wait on the Shahbunder, whose house is just by; and he sends to the Governor, to know if he is at leisure to receive you; when you wait on this officer some present is expected, as well for him as for the Governor. Here is nothing to be had for the people, but old buffalo, and the inhabitants are very imposing. The English pay 26 *per cent*, on all goods.

We have been treating of the voyages to Malacca, during the N. E. and S. W. Monsoons, from the different places situated to the westward; but before we proceed to give instructions for the rest of the straits, it appears more convenient that we should direct those who embarking at Malacca, are bound to any of those western places.

DIRECTIONS FOR RETURNING FROM MALACCA

TO THE COAST OF COROMANDEL, BENGAL, AND OTHER WESTERN PLACES,

AT DIFFERENT SEASONS OF THE YEAR.

By Monf. D'APRÈS.

THE bad weather which prevails on the Coasts of Coromandel and Golconda during the months of November and December, makes it unsafe for ships to arrive then at those places; so that they are obliged to wait at Malacca till the 10th of December, which is the proper time to undertake this voyage with safety.

Having doubled Fisher's island, which forms the west side of the road, you steer toward Cape Rachado, and thence to the low point of Parcelar hill, with a leading gale, the winds blowing then from E. N. E. to N. N. E. and with the help of the tides, observing to weigh when they are favourable.

When you have passed *Parcelar point*, you must steer W. N. W. until *Parcelar hill* bear E. 4° N. then keep it in that direction to pass between the North and South Sands. This course will soon bring you in sight of the easternmost or Round Arroa (Poolo Jamar) heretofore described; you may perceive it 6 or 7 leagues off, and in clear weather, Parcelar hill and this islet can be seen at the same time.

As soon as you are 2 or 3 leagues off the *Arroas* you may steer N. W. and even N. W. by N. for, in sight of the little rocks that surround these islands, you are to the

westward of the banks, which consequently are doubled: you will be in mid-channel between the banks and the islands when the latter bear S. W. 3 leagues. In this part you have soundings from 30 to 50 fathoms, when you approach the islands; but they decrease to 16 and 17 going towards the edge of the North Sand.

Keeping N. W. by N. will bring you in sight of *Poolo Jarra*, between which and the *Sambelongs* or Nine Islands, the currents generally run to the N. W. and afford an advantage not to be met with on the Sumatra side.

From *Poolo Jarra*, if you continue your course N. N. W. and N. W. by N. you may first see *Poolo Pinang*, or *Prince of Wales's Island*, then *Poolo Pera*, which you may pass at what distance you choose.

From *Poolo Pera*, if you are bound to Pondicherry or Madras, you must make the *Nicobar islands*, between or to the southward of which you may pass, as you like best. It is reckoned 95 leagues W. by N. 5° N. from *Poolo Pera* to these islands. Several ships pass through the *Sombreiro* channel, which is more northerly: others bound to Pullycat, or Madras, prefer at this time the *Ten-degree* channel (p. 358); of these you make choice, according to the port you are bound to.

If you are going to Masulipatam, or any other place more northerly, it will be better in leaving *Poolo Pera*, to shape your course to pass between the islands to the northward of the *Andamans*: this proceeding is surer, on account of the winds out in the Bay, which blow from the northward, and the currents running to the southward.

Observe farther, especially in January, to make the land always to the northward of the port you are going to; and, as you come near the land, keep a good look out, in order to avoid being deceived by the currents.

Ships from the Gulf of Siam, China, or the Philippine Islands, which sail in February or March, through the Straits of Malacca, for the Coast of Coromandel, must follow the preceding direction, and sail by the *Nicobar* islands, or through the *Sombreiro* channel, as to those who go from Malacca to Bengal in the N. E. Monsoon. We shall not repeat here what has been already said.

If you undertake this voyage from Malacca, in the months of April, May and June, when the westerly Monsoon is settled in these seas, you must from the *Arraas* steer toward the *Two Brothers*, keeping along the Coast of Sumatra, and the *Acbeen islands*; thence you endeavour to fall in with the Coast of Orissa in latitude $18^{\circ} 30'$ North; as it has been shewn page 290 and following, in the instructions concerning the voyages of Bengal, to which the navigator is referred for the rest.

Those who sail from Malacca, at the end of October or November, for the Malabar coast, must steer from *Poolo Pera* to go to the southward of the *Nicobar* islands; then shape a course to make the island of Ceylon to the northward of the *Bassas*, and sail along the southern coast thereof, as it is shewn in the instructions for voyages from the Coast of Coromandel to that of Malabar.

DIRECTIONS

**DIRECTIONS FOR SAILING THROUGH THE STRAITS OF MALACCA,
FROM MALACCA TO THE STRAITS OF SINGAPOUR.**

WHEN you weigh from the road of Malacca you are to pass without the *Water Islands*, which are called also the *Four Brothers*, the southernmost of which bears 3 leagues S. E. by S. from the anchorage, and may be coasted at about $\frac{1}{4}$ a league distance. You deepen your water gradually from 8 to 20 fathoms; and from 5 to 6 miles without these small islands, you will have from 20 to 25 fathoms; the bottom oozy and good anchorage. Hereabout the flood runs S. E. by S. and the ebb N. W. by N. at the rate of $1\frac{1}{2}$ knot.

Having passed the southernmost island steer S. E. or S. E. by S. to give a good birth to Formosa point and river, before which there is a bank whose outer edge stretches to $1\frac{1}{2}$ or 2 leagues from the coast; it lies along shore S. E. by E. and N. W. by W. from its south-east end Mount Formosa bears N. E. by N. and Mount Moar N. W. by N. and from its north-west end, Mount Formosa is bearing E. $\frac{1}{2}$ S. and Mount Moar North; and N. by W. just without the bank, there is another with only 5 fathoms, hard ground.

Eight leagues and a half E. by S. from the southernmost of the Water islands lies MOUNT MOAR, or *Mount Moora*, remarkable for the land about it being all low and woody; it bears 7 or 8 leagues E. by S. $\frac{1}{2}$ S. from the Water islands. Thence to Mount Formosa the coast stretches S. E. and S. E. by E.

MOUNT FORMOSA is better distinguished than Mount Moar, and bears from the outermost Water islands E. S. E. $\frac{1}{2}$ S. 11 or 12 leagues, and off Mount Moar S. E. 5 or 6 leagues. The bank just now mentioned bars up the river Formosa, and permits no nearer approach to the coast than 5 or 6 miles. If you turn it, keep your lead continually going, that you should not come too near its verge.

In your track to Mount Moar, you have soundings from 20 to 24 and 26 fathoms, oozy ground, from 3 to 4 or 5 leagues off shore; and pretty much the same depth from Mount Moar to Formosa point and river, at the same distance. If the winds are contrary, you may stand over from 15 fathoms on the Malaya shore, to 15 fathoms on the Sumatra shore, but no nearer. The tides hereabout are very uncertain.

From Mount Formosa to POOLO PISANG the direct course is S. E. 5° S. and the distance about 9 leagues. Having doubled the bank off Formosa river, you steer along S. E. and when Mount Formosa bears N. E. between 3 and 4 leagues, you will raise this island bearing S. E. $\frac{1}{2}$ E. or S. E. by E. you will then have soundings from 20 to

22 or 23 fathoms, oozy ground. The straits here are not above 10 leagues broad. Poolo Pisang is a pretty large, high, and woody island, which lies at 2 leagues distance from the main, and forms a channel in which there are not less than 4 fathoms water; on the west side of it lie 3 other small islands, the largest of which affords sometimes good water, and boats may land there commodiously at high water, in a bay on the north-west part: this island may be seen in clear weather 9 or 10 leagues off; then it makes in little hummocks, like a boat turned bottom upward. It flows here North and South.

Ships always keep on the Malaya side (on which they may borrow when necessary into 11 or 12 fathoms with safety), because off the opposite shore are many shoals, and foul ground. In the middle there is a bank which stretches E. S. E. and W. N. W. 8 leagues in length, and is very dangerous on account of its irregular depth, which on the north-west part chiefly, falls suddenly from 25 to 4 fathoms; and you may conclude the like all over it. From the westernmost part of this bank Mount Formosa bears N. E. by N. and Poolo Pisang E. by S. about 8 leagues, or just in sight, and from the east end of the said bank Poolo Pisang is bearing E. N. E. $\frac{1}{4}$ N. or N. E. by E. 2 or $2\frac{1}{2}$ leagues distant.

Between this bank and Poolo Pisang is the common channel, the leading marks for which are, Mount Formosa N. N. W. $\frac{1}{4}$ W. and Carimon S. S. E. $\frac{1}{4}$ E. in 21 or 22 fathoms, mid-channel; or from 9 to 10 or 12 fathoms, 2 or $2\frac{1}{2}$ miles from Poolo Pisang, to 18 or 19 fathoms on the sand-side, from which it shoals suddenly to 10, 9, 7, 5 fathoms. The channel is but narrow, according to most navigators, having not more, as they imagine, but 4 miles from the shoal, off the island, to the sand.

"But in my opinion," says Mr. *Nichelson*, "the channel is at least 2 leagues wide, and I am well assured of it by my own experience: for when Mount Formosa bore N. $\frac{1}{4}$ W. Poolo Pisang E. $\frac{1}{4}$ S. 4 leagues, and Great Carimon Island S. E. we had from 21 to 22 fathoms water: we steered E. S. E. $\frac{1}{4}$ S. 6 miles, and had from 21 to 17 fathoms; Mount Formosa bearing then N. by W. $\frac{1}{4}$ W. and Poolo Pisang E. $\frac{1}{4}$ N. 6 or 7 miles. We steered the same course 5 miles, and had from 17 to 19 fathoms, now Mount Formosa (which is the leading mark through between the island and the sand), bore N. N. W. $\frac{1}{4}$ W. and Poolo Pisang E. N. E. northerly. We steered S. E. 3 miles, and had from 20 to 21 fathoms, and Mount Formosa bore N. N. W. $\frac{1}{4}$ W. Poolo Pisang N. E. $\frac{1}{4}$ E. 5 miles, and Great Carimon S. E. by S. then we were clear of the sand to the south-westward of it. This proves that the channel is wider than most navigators have supposed it. We were a fleet of 11 sails, and much scattered; several ships without and within us, 3 or 4 miles, and none had shoalings on this sand."

From Poolo Pisang to Poolo Cocob, or *Cocops*, the distance is about $5\frac{1}{2}$ leagues S. E. $\frac{1}{4}$ E. This is a low flat island so close to the Malaya shore that you cannot distinguish it to be an island till you have passed it; but it may be known by its trees, which are of a very bright green. Between Poolo Pisang and Poolo Cocob lies a

small

small sand-bank which you may avoid by keeping a little off the Coast of Malaya; you have soundings in this track from 17 to 20 fathoms, mud.

You must observe that between Poolo Pisang and Poolo Cocob the Malaya coast is flat and shoal; therefore you are not to approach it nearer than 14 or 12 fathoms, nor to bring Poolo Pisang farther to the westward than N. W. or N. W. $\frac{1}{2}$ N. or stand nearer the Sumatra side than 15 fathoms; under this depth, there is foul ground, and shoal water, particularly when the east point of the Carimons bears S. E. $\frac{1}{2}$ E. 4 or 5 leagues; the outermost of the Two Brothers (two small rocks) right on with it, about 3 leagues, and Poolo Pisang N. $\frac{1}{2}$ E. about 2 leagues distance, it shoals suddenly from 15 fathoms, soft, to 9 fathoms, hard ground. The Two Brothers bear from Poolo Cocob S. W. by S. and between them are good soundings from 24 to 15 fathoms.

The tides between Malacca and Poolo Pisang, generally flow North and South, or at 12 o'clock, full and change, the flood to the S. E. and the ebb, which is the strongest to the N. W. but this general rule is much subject to variations.

DIRECTIONS FOR SAILING THROUGH THE STRAITS OF SINCAPOUR, OR THE GOVERNOR'S STRAITS.

THREE or four miles S. E. by E. from Poolo Cocob lies a point of low land, called TANJONG BOULUS, or TANJONG BOURO; which bears from the east end of Little Carimon island N. E. by N. and this distance, at about 3 leagues, makes the entrance of the *Governor's Straits*, or *New Straits of Sincapour*, in which you may stand to each side in 16 fathoms, soft ground, and no danger. Beyond Tanjong Boulus the Coast of Malaya forms a bight wherein some little rivers empty themselves; on the east side of the bight is a small island called Snakes island, between which and the westernmost end of Poolo Panjang, called also Long island, and Sincapour island, is the entrance of the *Old Straits*.

The Carimons are two pretty large and high islands, called the **LITTLE** and the **GREAT CARIMON**; the Great Carimon, the highest of the two, is remarkable by its peak. Between Poolo Cocob and the Carimons you have soundings from 17 to 20 and 24 to 17 fathoms toward the latter, which you are not to approach nearer than that depth, oozy ground from side to side; the east end of Little Carimon lies S. S. W. about 4 leagues from Poolo Cocob.

The tides from the Straits of Sincapour, and those from the Straits of Dryon to the south-eastward, meeting here in some measure, become very uncertain in this entrance, and depend much on the wind; they set stronger to the eastward and the southward, but

but generally longer to the N. W. sometimes 18 hours one way, and 6 hours the other.

"When at anchor, in 22 fathoms," observes M. *Nichelson*, "Tree island bearing S. E. by E. 2 miles, we found the tide set $1\frac{1}{2}$ knot from N. W. to North for 12 hours; sometimes it would slack, and then run strong as before. It sometimes runs as long, or longer, to the S. E. and much stronger."

TREE ISLAND, OR SANDY ISLAND, is a narrow island or sand, lying E. S. E. and W. N. W. about 2 miles in length. At low water this island is dry; at high water it is almost entirely covered, there being nothing to be seen but a large remarkable tree, which is nearest the east part of it, and 5 or 6 clusters of small shrubs, with a small rock. The north-west side of this island is broken ground, and from the west end of it runs out a long ledge of rocks, partly dry at low water, and over which the ebb tide sets; come no nearer this part than 17 fathoms. This island being steep to, and therefore dangerous to be approached in the night especially, as you can form no judgment of its distance by the soundings, if it cannot be seen, you are never to come under 15 or 16 fathoms. To the southward of Tree island, there is a reef which stretches a great way off, and to which ships bound through the Straits of Dryon must give a large birth.—The tree on this island bears from the north peak of Great Carimon E. $\frac{1}{4}$ N. and from the south part of Barn Island S. by W. about 4 miles.

To the E. S. E. of Tree island lies another called RED ISLAND from the redness of the sand on its beach. It is small, covered with green trees, and may be seen at a pretty good distance. To the northward and southward of this are a great number of other islands. It bears from the south part of Barn island S. by W. about 4 miles. In case of necessity you may anchor abreast of Red island, in 18 fathoms water: but come no nearer it, on account of the several rocks which surround it.

BARN ISLAND (called by the French *Square Island*, or *Passage Island*) is bearing, at its south part, from the north side of Little Carimon E. $\frac{1}{4}$ N. distance $6\frac{1}{2}$ or 7 leagues. It is a pretty large island, high and woody; on the west side of it there is a white mark, which at a distance much resembles a large barn, by which it may be easily known. There is good anchorage to the westward of Barn island, from 9 to 14 fathoms, at a distance from $\frac{3}{4}$ to $1\frac{1}{2}$ mile off shore, the island bearing from N. E. to S. E. You have a good birth with the outermost of the two islets, Rabbit and Coney, bearing East southerly, and the extremes of Barn island from E. N. E. $\frac{1}{4}$ N. to N. by E. about $\frac{3}{4}$ of a mile off shore.

The RABBIT and CONEY are two small rocks or islets which are steep to, and lie about $\frac{1}{4}$ a mile S. by W. $\frac{1}{2}$ W. from the south part of Barn island; when they are in one they bear, according to Mr. *Nichelson*, N. by E. $\frac{1}{2}$ E. and S. by W. $\frac{1}{2}$ W. and according to M. *D'Après* S. by E. and N. by W. there are 22 or 20 fathoms within $\frac{1}{2}$ of mile of these rocks; and at 1 or $1\frac{1}{2}$ mile to the eastward of them, you have irregular soundings,

soundings, from 19 to 30 fathoms rocky ground. From the Rabbit and Coney you find to the westward of Barn island 22 to 14 fathoms; there you may anchor in clear ground from $9\frac{1}{2}$ to 12 or 14 fathoms, on a bank about $1\frac{1}{2}$ or $\frac{1}{2}$ of a mile off shore; between which and Barn island you have 18, 19, and 20 fathoms, gravelly ground. The southernmost of these rocks the French have called *the Viol*, on account of its similitude to that instrument at a certain point of sight.

Being mid-channel, between Tanjong Boulus and Little Carimon, in soundings from 17 to 20 fathoms, oozy ground, steer to the south-eastward till you bring the north point of Little Carimon to bear W. $\frac{3}{4}$ S. or W. $\frac{1}{2}$ S. then steer to the eastward with these bearings, and you will have from 18 to 20 fathoms; and as you advance to the eastward, you will bring the north high peak of Great Carimon in one with the south point of Little Carimon, which will then bear W. by S. $\frac{1}{2}$ S. and its north point W. $\frac{1}{2}$ S.

These are good leading marks to go clear of Tree island, about 2 miles to the northward of it. Endeavour to get a sight of this island, as soon as possible, as it lies in the fair way, and is one of the best marks for Sincapour Straits; but you must be very careful of the setting of the tide, which in this part is very uncertain; you must also avoid the northern shore, lest being becalmed, or having a southerly wind when out of the true tide's course, you should be driven in the Old Channel; it would then be difficult to get into the fair way again, on account of the constant indraught which is found amongst these islands.

Continuing to steer to the eastward, with either or both of the above leading marks on, you will soon perceive the white mark on Barn island, bearing E $\frac{1}{4}$ S. and may steer right for it, with great safety. The soundings, in the middle of the channel, between Tree island and Barn island are from 24 to 30 and 33 fathoms, which decrease on the side of Tree island to 15 and 16 fathoms, under which, as we have already observed, it is not advisable to go: on the side of Barn island they shoal to 10 or $9\frac{1}{2}$ fathoms, about $\frac{1}{2}$ of a mile from the westernmost part of it, where there is good anchorage, as it is likewise mentioned here above. From that depth toward Barn island, you deepen your water to 14, 18, 19, and 20 fathoms, and toward the Rabbit and Coney, from 10 to 14, 16, 20 and 22. You may pass, if there be occasion, within $\frac{1}{2}$ of a mile of the Rabbit and Coney, in 20 and 22 fathoms, red gravel.

The Sincapour Channel lies between the Rabbit and Coney and Red island; you may keep in the middle, but it is better to stand nearer the Rabbit and Coney, which are bold to; whereas the south shore is foul and dangerous, with sunken rocks, some of which are like the westernmost rocks, that lie S. E. by S. 4 or 5 miles from Barn island, and can only be seen at low water: you have 30 fathoms about a mile to the northward of them, and 20 fathoms have been found close to them: there is not more of these rocks dry at low water, than the bigness of a ship's long boat.

Next to these is a single black rock, called by some the *Elephant*, and by others the *Buffalo*, about the size of a ship's long boat, which is always to be seen; it lies about one half of the channel over from the islands, on the south side, and is steep to, having 17 or 18 fathoms close to it, and 30 a little without it; this bears from the former danger about East; from Barn island E. by S. 6 or 7 miles, and from St. John's island S. W. $\frac{1}{4}$ S. $2\frac{1}{2}$ or 3 miles.

The third danger is a ledge of rocks always above water, and a shoal without it, which lie E. by N. 6 or 7 miles from the second rock, and S. E. $\frac{1}{4}$ S. from St. John's island; but the shoal lies S. E. by S. from that island, between which and the rocks, you have from 15 to 18, 20, 30, 40, and 50 fathoms water; and then shoals again suddenly to the southward.

Being abreast of the Rabbit and Coney your course to St. John's island is E. by N. or E. N. E. according to the wind; the distance is about 4 leagues, in soundings very irregular from 30, 25, 20, and 18 fathoms, hard ground, decreasing 5, 6, or 8, and sometimes 10 or 12 fathoms at a cast. In this track you should borrow on St. John's island, in order to avoid the dangers, above described, on the south shore. You may go within a mile or less of that island, clear of all danger, it being steep to; within $\frac{1}{4}$ of a mile from it you have 20 and 24 fathoms; and off its southern part it deepens toward the south shore to 30, 40, and 50 fathoms, and then shoals suddenly.

ST. JOHN'S is a pretty large and high island, covered with trees, having two small islets to the westward pretty near it. This is the easternmost island, as Barn island is the westernmost, on the north side of this narrow passage; and they bear of each other E. by N. and W. by S. about 4 leagues. In case you want wind or tide to pass through before night, there is good anchorage under St. John's island, from 12 to 14 fathoms, the island bearing from W. S. W. to S. W. by W. about 2 miles distance. There, and indeed on most of these islands, you may have plenty of water, and of wood for cutting. You can anchor with as much safety to the westward of Barn island, as before mentioned; and likewise between St. John's and Barn island, though it is best not to choose this anchorage, if it can be avoided; for the bottom is rather foul and the soundings irregular.

The tides are very strong between St. John's and Barn islands, and they set as these islands lie, the flood E. by N. and the ebb W. by S. the time of their flowing is uncertain; but they run longer to the eastward in the S. W. Monsoon, and the contrary in the N. E. Monsoon.

From St. John's island Point Romania lies E. by N. $\frac{1}{4}$ N. distance 13 leagues, and Pedra Branca E. by N. 15 or 16. Between these places is a wide and clear channel, especially on the north side, except a sand which stretches out S. E. from the east end of Sincapour island, about 6 or 7 miles, even as far as the mouth of the River Johore; it is steep to, having from 12 to 14 fathoms just without it. Its bearings are St. John's island W. S. W.

W. S. W. 6 leagues; the east end of Sincapour island N. W. by N. $2\frac{1}{2}$ leagues; Johore hill N. E. and the easternmost land to be seen off Point Romania E. $\frac{1}{2}$ N. 6 leagues. Come not under 18 or 20 fathoms water, nor nearer the shore than 3 leagues, till you are past the said bank; taking care to keep St. John's island W. by S. and Point Romania E. by N.

When you have doubled this dangerous bank, you may keep in with the north shore, (the coast being clear and steep) in soundings from 15 to 16 fathoms, oozy ground; or in the fair way, from 20 to 25 or 30 fathoms, steer directly for Pedra Branca, to the northward of which you must pass.

POINT ROMANIA is the south-easternmost point of the Malaya Peninsula; its extremity is low, but on this side it rises into a little hill, called *Barbucet hill*, which in coming from the northward serves as a mark to enter the Straits, and when in one with the southernmost island off the point, it bears W. N. W. To the eastward of point Romania are several large rocks above water, encompassed with many other, always covered, which together form a very dangerous reef.

PEDRA BRANCA, (the *White Stone*), so called from its being covered with birds' dung, which makes it look white, is low and very steep; it lies from the outermost rock or islet off Point Romania, E. by S. $\frac{1}{2}$ S. about $2\frac{1}{2}$ leagues, which is the breadth of the channel. In mid-channel the soundings are 25 fathoms, near the reef off Point Romania 18 or 20, and near Pedra Branca 30 fathoms; but to the eastward of Pedra Branca it decreases again to 20, 15, and 12. Pedra Branca bearing W. by S. 3 leagues, there are 12 fathoms, sandy ground; but near the reef you have hard ground, and uneven soundings from 17 to 12 fathoms.

This reef off Point Romania is more extensive and dangerous than it is generally imagined. "We went through these straits," says Mr. *Nichelson*, "in the night, by moon-shine, with the wind at S. E. and dragged along the south side of the reef in 20, 19, 18, 22, 20, and next cast had 17 fathoms. I could see (by altering the land) that a very strong tide set us to the eastward; and by shoalening the water, imagined we were coming near the south-east part of the reef; whereupon anchored in 17 fathoms, and lay till day-light; when the ship was brought up, tried the current, and found it set N. E. by N. 4 knots; and at day-light had these bearings, the outermost island off Point Romania W. S. W. $3\frac{1}{2}$ leagues, and Pedra Branca S. S. E.

"His Majesty's ship *Panther* made the signal of distress being amongst the shoals; she bore off us N. N. E. about a mile distance. She was in 4 fathoms, and had only $3\frac{1}{2}$ all round her, except the place she got out at, and there but bare 4 fathoms. At 6 A. M. we weighed, being slack tide, or low water, and steered E. $\frac{1}{2}$ N. 3 miles, in 17, 16, 17, and 18 fathoms; then steered N. E. by N. 2 miles, and had from 18 to 24 fathoms; then Bintang hill bore S. $\frac{1}{2}$ E. Barbucet hill W. $\frac{1}{2}$ N. Pedra Branca S. by W. westerly, and the outermost island off Point Romania W. by S. $\frac{1}{2}$ S. about 4 leagues.

" I would not advise a ship, going through these straits to the eastward, with the wind South or S. E. to come nearer the south side of this reef than 20 fathoms; for it shoals very suddenly from 17 to 12, 8, 5, and 4 fathoms, with overfalls of 4 or 5 fathoms at a cast; and be careful to observe the ebb-tide, which sets right over the reef very strong; for the tide would very soon have set us near to where the *Panther* was, had we not anchored as we did.

" Pedra Branca bearing S. W. by S. about 4 leagues, you are clear of the reef; and for a long and safe leading mark, keep Bintang hill S. by W. $\frac{1}{2}$ W. which will lead you clear of the reef, in no less than 15 or 16 fathoms. By steering to the north-eastward, the water deepens fast to 20, and 25 fathoms.

Pedra Branca, by a good observation, lies in latitude $1^{\circ} 20'$ North, and bears from Bintang hill N. by W. about 5 leagues. From Pedra Branca to the outermost part of the reef, the course is N. E. by N. 4 leagues; and when Bintang hill bears S. by W. $\frac{1}{2}$ W. 6 or 7 leagues, in 15 or 16 fathoms, oozy ground, you are without the point of the reef, and may then steer N. N. E. or N. by E. for Poolo Aore. Bintang and Barbutet hills bear from each other N. W. by N. and S. E. by S. 10 or 12 leagues.

" In the N. E. Monsoon the flood runs strong into the straits, through the narrow passage between the Romania rocks and Pedra Branca (S. W. without, and W. S. W. in the narrow passage) frequently for 12 hours together, and sometimes longer, when it blows fresh. But in the S. W. Monsoon the ebb-tide runs longest to the E. N. E. and N. E. over the reef, at the rate of 4 knots. The time of high water, at full and change, is uncertain; only in the S. W. Monsoon it flows nearest North and South, or 12 hours; but in the N. E. Monsoon it has great dependence on the winds."

The passage to the southward between Pedra Branca and BINTANG or BINTAM Island is full of rocks and dangers. On the south part of Bintang is the Port of RHIO in latitude $1^{\circ} 0'$ North. The French ship *Vigilant* gives the following directions for sailing toward this port. You bring Barbutet hill North, and a South course carries you to the entrance between Poolo Battam and Poolo Bintang; there lies a small shoal in that entrance, on either side of which you may go, and thence the same south course carries you to Poolo Luban, a small island at the south end of the channel: between it and the shoal there is no danger but what you see. Give this island a good birth, and an E. by S. or E. $\frac{1}{4}$ S. course brings you to good anchoring ground in 7 fathoms, off Poolo Beeringa, at the entrance of the south creek of Rhio.

INSTRUCTIONS FOR SAILING IN THE S. W. MONSOON,
FROM THE NICOBAR ISLANDS, THROUGH THE STRAITS OF
MALACCA AND SINGAPORE.

By SENHOR PEDRO DE NOVA, an experienced Portuguese Pilot, who carried the CAMDEN
through these STRAITS in June 1770.

1^o FROM POOLO RONDO TO THE ARROAS ALONG THE SUMATRA SHORE.

" IN May, June, July, and August, the S. W. Monsoon being at its height, the winds in the Straits blow chiefly from S. E. to South as in the N. E. Monsoon they blow a good deal to the N. W.

" Enter the Straits by Poolo Rondo, and steer along the Sumatra shore until you reach *Diamond Point*, along which coast you have no soundings, (one place excepted off Pedir river) but at 2 miles, or better, from the shore.

" When abreast of *Diamond Point* you have soundings, from 30 to 50 fathoms, all the way from the Sumatra shore to Poolo Pera, and from thence to the Malaya shore.

" It is safer to enter the straits by the Sumatra than by the Malaya shore, because in passing over from Poolo Rondo to Poolo Bouton, should the wind come from the S. S. E. or should it fall calm in the middle of the passage, the N. W. continually draining thereabouts (in the S. W. Monsoon) may set a ship up into 7° or 8° North, before she reaches the coast, and all that you will have to work back again; this very case has happened to several ships. Along the Sumatra shore, nearing down *Diamond point*, you are less subject to calms, and generally find a drain setting into the straits in with the shore.

" At *Diamond point* you meet the tide setting S. E. and N. W. varying a point or two in different situations. The drains to the N. W. set stronger and longer than those to the S. E. (but seldom in the wide part of the Straits) above 1 $\frac{1}{2}$ knot an hour.

" An Indiaman should, beside her stream-anchor and cable, have one or two anchors of 14 cwt. with two ten-inch cables: a ship may then anchor, if the wind sets in to the S. S. E. which often happens, blowing fresh 7 or 8 days; or if it falls calm, and the currents

currents against her, there are scarcely any winds, in the Straits, that such a kedge or stream would not hold or ride them with a large scope. You may, as soon as you are the length of Diamond point, stretch across with safety, always secure of stopping when the current is against you; and it is by these means the Portuguese work down to the Arroas, whilst our ships are losing ground. There is good anchoring along the Sumatra shore and Diamond point to *Poolo Varella*, and over also on the Malaya shore, by Pinang (Prince of Wales's Island), Dinding, and the Sambelongs; provided, as above directed, a ship is so found as to bring up in the deepest water there is across the wide part of the Straits, whenever she is becalmed, and finds the current against her.

"In gaining along the Sumatra shore to *Poolo Varella*, keep without the *Brothers*, and do not anchor under 30 fathoms; there are many spots of soft clean ground, but under that depth it is generally very foul.

"From the *Brothers* steer E. S. E. for the Arroas, from whence they are distant 23 leagues; the *Brothers* lay S. E. by E. about 9 leagues from *Poolo Varella*; the Arroas bear from *Poolo Jarra* S. S. E. distant about 22 leagues.

"The *Arroas* in sight, steer within 7 or 8 miles, until you bring the Round or Great Arroa W. $\frac{1}{2}$ S. working in sight of the Long or Little Arroa; you will not get less than 30 fathoms, without going too near some of the rocks. *Note*, It is to be observed, that the depths in general, through the Straits, are very irregular, but especially where the ground is hard.

"The *Long Arroa* must not be approached nearer than 7 or 8 miles; at that distance you have 32 fathoms, or thereabouts, good ground; but nearer, the ground is rocky and dangerous, besides the uncertainty of the sets amongst these islands.

"If you keep the Arroas on board, by this direction, you cannot have under 30 fathoms, when the Round Arroa bears S. W. and from that bearing, till it bears W. S. W. Between the North Sand and the Arroas lies a very irregular bank with soundings, from 15 to 6 or 7 fathoms, altering 4 and 5 fathoms at a cast; it is not dangerous, but alarming to strangers, no mention being made of it in the draughts."

2° FROM THE ARROAS TO PARCELAR HILL.

"IF you stand over to the *North Sand*, you may anchor in 16 or 18 fathoms, a proper distance from it; and if you have a leading wind from the N. W. or if the wind is from the north-eastward, you may steer in that depth, along the edge of the Sand, about S. S. E. or S. by E. until you bring the Round Arroa W. $\frac{1}{2}$ S. almost sunk from the deck; but in running down along the North Sand, do not lose sight of the Arroas, and you will not be too near the Sand.

"The

" The Round Arroa, W. $\frac{1}{2}$ S. steer East for *Parcelar Hill*, having a proper regard to the tides, to prevent your altering the bearings of the Round Arroa: *Parcelar hill* rises in sight from the quarter deck, before you sink from thence the two small rocks appearing on each side of the Round Arroa; bring the hill E. $\frac{1}{2}$ N. (by the azimuth compass) and have a due regard to the tides, not to alter this bearing; and in that case you will never have less than 15 fathoms, or thereabouts, through the channel. When the Round Arroa is sunk from the deck, you are abreast of South Sand Head, and therefore entered the channel; the hill E. 9° N. you are on the edge of the foul ground: and the little hill E. by N. you would be on shore on the South Sand Head, where there is from 9, 8, 7 fathoms to 1 fathom, faster than you can heave, the ground foul and stony. The North Sand is much more steep and dangerous: a Portuguese ship, the hill E. $\frac{1}{2}$ S. of her, had but 6 fathoms; the anchor let go, and with only $\frac{1}{2}$ of a cable, the tide setting to the N. W. swung on shore, and close within the anchor was only 2 fathoms: so very steep is the North Sand Head, that, in turning over, you must never bring the hill to the southward of East, nor more to the northward than E. $\frac{1}{2}$ N. standing no nearer to the Head than 12 fathoms.

" With the hill E. 2° N. and a leading wind, you will carry 16 and 17 fathoms all along the channel, until you come to soundings on the other side of the Sands; you will then deepen, and get into soft ground. The breadth between the Sand Heads, where you would be on shore on each side, is 7 or 8 miles.

" In the night you must not weigh, unless before dark you have anchored within or abreast the South Sand Head, and the bearings of the hill are E. 2° N. In this situation you may weigh as soon as the tide sets S. E. by S. if the *Sumatra* is come on, steering East if the wind is light, and E. by S. if fresh. (Note, A *Sumatra* is the wind blowing from that shore about S. or S. W. it generally begins about midnight, and lasts till 2 or 3 o'clock in the morning.) Running thus will carry you, from 15 to 17 fathoms, quite across, very regular soundings, fine sand: if you find you shoal under 15 fathoms, steer a little more to the eastward.

Should you weigh in the night, the wind at N. W. or N. by W. steer E. $\frac{1}{2}$ N. through the channel; but if you should shoal to 10 fathoms, keep away E. S. E. until you deepen again; you are then very safe, and may steer through the proper course. Heave quick during the night, and never offer to run with the ebb on any account, that is, when the tide runs to the N. W. its sets are very uncertain, and the winds are the same. But the set of the flood is true, and when half through the channel, the tide sets clear of the *South Sand*, or only just flants over the westernmost parts of it, where the ground is good, and the depth safe; but with the N. W. tide you are liable to be horsed on the North Sand Head, without the least warning to prevent it.

" In running in the night, and when it is too dark to see *Parcelar hill*, be governed by the following rule: If it is calm observe what the tides go; when you are at anchor, and
if

if you have not that opportunity, allow on the full of the springs, $2\frac{1}{2}$ knots, and on the neap $1\frac{1}{2}$ hour, through the Straits, and so proportionally: add this to what the ship goes by the log each hour, and run altogether, by wind and tide, 15 miles from sinking the Round Arroa, from the deck; you will then come to 22 fathoms, soft ground, and may steer away E. S. E. or E. S. E. $\frac{1}{2}$ S. keeping between 22 and 19 fathoms, for about a league. Then steer S. E. until you see the hill, or low land, which you will do by the time you are through the channel, unless it is very dark. But should you run a little too far to the eastward, before you see the land, from the darkness being too great, you may anchor in 12 fathoms water, $1\frac{1}{2}$ mile from the low land off Parcelar hill or point, certain of being safe through the channel, should the tide, or wind, make it improper to run farther."

3° FROM PARCELAR POINT TO CAPE RACHADO.

"OFF *Parcelar Point*, you may stand in 14 fathoms, in turning, and then about, and stand off about 2 miles, not going under 24 or 25 fathoms, until the hill bears N. E. or N. E. by N. The soundings between the Sand and the Malaya shore, from Parcelar to *Cape Rachado*, are too irregular to be any guide. The hill N. E. by E. if you stand on to the land, you may be soon ashore, but when it bears N. E. by N. you may stand on, or over it; you will carry no less than 12 fathoms over it, though the overfalls may be sudden from 18 or 20 to 14 fathoms.

"That this may be done with safety, is of consequence to be known, for the winds hanging to the S. E. and S. S. E. and in the middle of the night blowing from the Sumatra shore, from S. W. to S. it is a practice with those who are experienced in the Straits, to anchor always in the evening on the ebbs, to or on the Sand; by this they make a great advantage of the Sumatra, or night winds, which seldom fail laying them round Cape Rachado, and would have been of little or no service on the Malaya shore. In the morning ebbs they anchor close in with the Malaya shore, and lay for turning in the channel, if they have a S. E. wind, or driving if calm: the sun being in general so very powerful in these Straits, the middle of the day is much subject to calms, the freshest wind always blowing at night, or in the morning early. Between Parcelar point and Cape Rachado, lays a very dangerous shoal 2 leagues from the shore, and about 2 miles long. From Cape Rachado, 9 or 10 miles is a little island $1\frac{1}{2}$ mile from the shore, which lays within it, and when it bears N. N. E. you may stand within 2 miles of the shore.

Parcelar point and Cape Rachado lay N. W. and S. E. from each other, the land between them running into a large bight: take care by your bearings to keep without

them both, and nothing can hurt you. In standing in there, do not come under 18 fathoms in the night, nor under 15 in the day, and no nearer: off Parcelar you may stand, if well acquainted, to 12 fathoms. Cape Rachado is steep to; you have 20 and 25 fathoms, within a mile of it.

4° FROM CAPE RACHADO TO MALACCA, AND POOLO PISANG.

"FROM this Cape to Malacca, stand no nearer to the Malaya shore than 15 fathoms in turning, but on the other tack you may stand well over to the Sumatra shore, as the Sand to the southward of that, which forms the south side of the channel (passing over from the Arroas to Parcelar hill) and lies from Cape Rachado down to Malacca, has very unequal soundings, but no where less than 10 fathoms on it. It is of consequence to know this, that, by standing over and well to the Sumatra shore, you may by that means fetch, the assistance of the night-winds already mentioned, Malacca road much sooner than you would do, with the winds hanging to the eastward of South, by short boards along the Malaya shore.

"Anchor in Malacca road in 7 or 8 fathoms water, soft ground, the church on the hill N. E. by E. more northerly is not so well, the ground being rocky and coarse.

"From Malacca steer to give the *Agoada*, or *Water Islands*, a good birth of 2 or 3 miles; in turning stand no nearer than 10 fathoms, over to the small Sand, lying S. W. 4 leagues from these islands, and no nearer the islands than $1\frac{1}{2}$ mile; you have 20 fathoms close to them, and the Sand has 4 and $4\frac{1}{2}$ fathoms, on the shoalest part.

"Clear of the Water islands, stand no nearer the Malaya shore than 12 or 14 fathoms, and steer from them S. E. to raise Poolo Pisang; *Mount Formosa* N. N. E. do not go under 16 or 17 fathoms; the Mount N. 4° E. a bank lies off it, 4 miles from the shore, with only 4 fathoms, or less, upon it. After you are clear of the islands, go no nearer the Malaya shore than 3 leagues, and you will raise *Poolo Pisang*, bearing S. E. by E. or E. S. E. Steering on S. E. you will pass it at 3 miles distance, and go clear of a bank on the Malaya shore, S. E. from the island. E. S. E. you are in the fair channel between Poolo Pisang and the Sand to the westward of it, whereas East or E. by S. you will, by standing on, come into 4 fathoms, soft ground; steer East or E. by N. you will soon deepen again, but by keeping over to the shoal water, you have an advantage from the southerly winds. The north-west and south-west parts of the Sands are dangerous, hard and bad ground; but you carry 4 and $4\frac{1}{2}$ fathoms, soft ground, with great safety, over the north-east part of them."

5° FROM POOLO PISANG THROUGH THE STRAITS OF SINGAPOUR.

" PAST Poolo Pisang, at the distance of one league, you are in good water; in turning, stand to the island in 12 fathoms, and to the Sand in 10; the channel is about 2 or 3 leagues wide: Pisang E. N. E. you are clear of the south-west end of the Sand. Those experienced in this passage get the shoal water on the Sand by choice, not only to take advantage of the southerly winds, but that also of the soundings, if in the night, by edging off the bank into 14 or 15 fathoms; keeping in that depth along it, the soundings are more regular, and the ground softer than on the Pisang side of the channel, and, therefore, a better guide.

" Keep along in these soundings, checking, if little wind, according as your soundings are, E. S. E. or E. by S. $\frac{1}{4}$ S. and when Pisang bears E. N. E. being clear of the Sand, steer S. E. or S. E. by S. for the *Little Carimon*, which you pass at the distance of 4 or 5 miles, carrying near to it soundings between 18, 19, and 25 fathoms. In turning from Poolo Pisang, to the *Carimons*, stand no nearer the Malaya shore than 14 or 15 fathoms, 2 or 3 miles off, or nearer the *Carimons* than 3 or 4 miles; you will then see the *Rabbit and Coney*; when abreast the *Carimons*, and when they bear E. S. E. steer right for them, keeping in about 15 or 16 fathoms; they are two small rocks laying off the south end of *Barn Island*. With this course you will soon raise *Tree Island*, called also *Tree Bank*, right a-head: if the wind is southerly, borrow on *Tree Island* into 14 fathoms, but not under; this is in your favour for rounding *Rabbit and Coney*. If the wind is too far to the eastward, work under *Barn Island*, then anchor and wait for the wind.

" On no account move for these Straits in the night, as you are liable by sets to be hurled to the southward and S. W. into dangers. When *St. John's Island* opens to the southward of the *Rabbit and Coney*, steer away for it, and round the rocks at less than $\frac{1}{2}$ mile distance. In steering for *St. John's*, which is a small woody island, about 4 or 5 leagues from *Barn Island*, you will find the soundings very irregular, from 20 to 35 fathoms, and on each side the ground rocky and dangerous; therefore steer right for *St. John's*: you will, in general, from the shortness of the distance, with the help of the tide, be able to push past it, without stopping, and under *St. John's* is good anchoring.

" Steer from *St. John's* E. by N. and you will raise *Pedra Branca*, E. by S. From *St. John's* to *Pedra Branca* the distance is about 7 or 8 leagues. With a leading wind keep in 22 fathoms, nearest to the north shore of the two; on that shore anchor in 12 or 14, and in turning in, between *St. John's* and *Johor*, do not stand to the northward under 12 or 14 fathoms, nor beyond 25. When you are past *Johor* and abreast of *Barbucett Hill*,

Hill, in turning do not stand to the northward in less than 16 or 17 fathoms, nor to the south side deeper than 20 or 22 at most.

"In these depths round *Point Romania*, and when *Pedra Branca* bears S. S. W. or *Bintang Hill* South or S. $\frac{1}{2}$ W. steer away N. N. E. for *Poolo Aore*; with a leading wind pass *Pedra Branca* at 2 miles distance; if in the night, and you are in the fair channel, steer E. by N. until you are sure you have run the proper distance, as well as deepened your water to 24 and 25 fathoms; then steer N. N. E. But if you deepen your water too soon, that is, before you have run the distance, edge gradually to the northward; in that case, if you shoal, steer again immediately E. $\frac{1}{2}$ N. or East, certain that you are not without the shoal; for if you are within *Point Romania*, and steer N. N. W. you will go fast from 15 to 4 fathoms, and soon be on shore; and in rounding *Point Romania* close to, steer then directly for *Poolo Aore*, you will come upon a flat where there is only 9 or 10 fathoms.

"In the night-time by edging gradually away, if you preserve your depth, you are sure of being without the Sand, and so continue rounding to the northward till you can keep in 25 or 25 fathoms water in a N. N. E. or N. E. course.

"The shoal extends from the islands off *Point Romania*, about 6 or 7 miles to the eastward; the largest of the islands bearing W. S. W. you are to the northward of the shoal."

DIRECTIONS FOR SAILING FROM WITHIN THE STRAITS OF SINCAPOUR, THROUGH THE STRAITS OF DRYON, ALONG THE EASTERN COAST OF SUMATRA.

By Captain JOHN HALLETT.

"WHEN you have rounded *Little Carimon*, keep in about 10 fathoms till you have the opening fair between *Great Carimon* and *Sabon*; then haul in 7 or 8 fathoms, and keep that depth on the starboard shore; it will carry you clear of the *Middelburg Ground* (if there is such a shoal), being informed by a Dutch commander that it lies near the *Twins*, or *Two Brothers*, which you will open when they bear E. by N. and as you bring them to the N. E. by E. they will be shut in behind a bluff round island, which is of a reddish colour, near the water; then you may keep mid-channel. When you first open the *Twins*, you will see a small low island, with a tree or two on it, between the *Twins* and the *Bluff* island; but it lies without them considerably, as you will perceive in running down the Straits, and this, I believe, is what they lay down for a shoal.

" From the aforefaid iflands and bearings, fteer down the Straits, about S. by E. or S. by E. $\frac{1}{2}$ E. (having regard to the tides, which fet strong and very uncertain) you will deepen your water to 12, 13, or 14 fathoms; and as you run on, you will fee the opening between the *Two Dryons*, called the North and the South, or the Great and the Little Dryons. When the opening bears Eaft, you will bring a round ifland between you and the gap; and when it is on your larboard beam, about $\frac{1}{2}$ of a mile you will have another ifland on the ftarboard beam, diftant about 2 miles, and in 20 fathoms: this is the narroweft part.

" From this opening you muft keep neareft the larboard fide; and about 3 miles from the ifland you paffed on the Eaft, in one with the opening, there is another bearing S. S. E. to which you muft give about a mile birth, becaufe of the foul ground about it. As you round this ifland you will open the easternmoft of the *Three Brothers*, bearing S. E. by E.

" When round this ifland you muft haul up Eaft or E. by S. between *South Dryon*, on the larboard fide, and a large ifland with high land on it, on the ftarboard; this part is about 5 miles over, and 17 or 18 fathoms all through, till you bring the fouthernmoft point of the South Dryon, N. E. by N. or N. N. E. and the easternmoft of the *Three Brothers*, S. E. $\frac{1}{2}$ S. and then your water fhals gradually to 23 or 12 fathoms.

" Off the fouthernmoft point of South Dryon, clofe in fhore, lie three fmall iflands and a fhool without them; therefore come no nearer than a mile to thefe iflands, the westernmoft of which makes like a tombftone.

" There is a paffage between the *Three Brothers*, but I believe not very fafe; therefore, if the wind and tide will permit, it is beft to round the easternmoft, and you will find regular foundings of 12 and 13 fathoms, mud.

" From hence fhape your courfe for the *Calantigas* which lie North and South, about 13 leagues (from the *Three Brothers*) in foundings from 13 to 17 fathoms, mud; here are very ftrong tides, therefore it is beft to anchor in the night.

" When the *Calantigas* bear South, 5 or 6 leagues, you have 13 fathoms, mud; and when the northernmoft is brought to bear S. E. by S. 4 miles, you have only 9 or 7 fathoms, hard ground, which I take to be the end of the fand, which runs off from the point called *Tanjong Baffo*; for hauling in towards the iflands, we found the ground fometimes hard, and fometimes foft; when we rounded them from 7 to 9, from 9 to 7 fathoms, moftly hard ground, and when they bore N. N. E. $\frac{1}{2}$ N. all in one, 5 miles, we had 7 fathoms, foft mud, and afterwards hard ground: the fouthernmoft bearing N. by W. $\frac{1}{2}$ W. 2 leagues, had 9 fathoms, mud, and the iflands all open again: when it bears N. N. W. 4 leagues, and 11 fathoms, mud, you will fee *Poolo Berala* or *Varela*, E. S. E. 7 or 8 leagues: the *Englifh Pilot* lays down 17 or 18 fathoms all through, and a fafe paffage; whereas we found but 7 fathoms and hard ground. Therefore I would advife you to go

to

to the westward of these islands, where you will meet with 10 fathoms, mud, all through, and no danger, keeping nearest the islands on the east side of you, to avoid the sunken rocks, which lie about a league off the Three Brothers. There are also several rocks about these islands, but I believe none far off, except the above two.

" *Poolo Varela* lies S. E. about 11 or 12 leagues from the southernmost of the Two Brothers, for which, shape your course, leaving it on your larboard side, about 3 miles, in 9 or 10 fathoms, mud; and if you find hard ground, haul in for *Tanjong Bou* (or Hog's Point) but do not go under 5 fathoms water, there being off it a very hard sand and steep to. When you bring the said point West, haul into 7 fathoms, and never go out of that depth, till you round Batacarang point, where you enter the Straits of Banca."

THE WEST COAST OF SUMATRA.

EXTRACT OF THE SOMERSET'S JOURNAL, FROM THE COCOS ISLANDS TO
BENCOOLEN, ALONG THE WEST COAST OF SUMATRA,

WITH SOME ADDITIONAL REMARKS.

NOVEMBER, 1739, they met with strong westerly currents, and made $9^{\circ} 8'$ E. M. dist. from Point Palmiras to the islands Cocos, both low and covered with trees; the northernmost is by far the smallest. Variation off these islands $0^{\circ} 13'$ East.

VERKENS, or *Hog Island*, on the Sumatra coast, is full of hills of a moderate height, which are all covered with wood; there seems to be plain ground in it, and on the side that faces Sumatra, there are three very deep bays. They went within the island about 5 leagues.

" *Hog or Swines Island*," according to Captain *Sampson Hall*, " runs nearly E. by S. and W. by N. it is an island 15 or 16 leagues long and about 3 or 4 broad, with several hills of a moderate height, but much higher in the center of the island than at either end: there are two small flat islands a little way from the south end. About 7 or 8 leagues, N. E. nearly from its north end, lies the northernmost of the two islands Cocos."

POOLO BANIACK, or *Panjack*, to the eastward of Hog island, has a high peak like a sugar loaf. They got soundings in latitude $2^{\circ} 30'$ North, about 6 leagues off shore, from 35 and 40 to 45 and 50 fathoms; the current all along setting to the N. W. The peak

peak of Baniack S. $\frac{1}{2}$ W. 4 leagues, 17 or 18 fathoms; they sent their yawl to sound in shore, when Poolo Baniack and two other small islands bore from S. S. W. to S. W. $\frac{1}{2}$ S. 5 leagues; found no less than 17 fathoms, within 3 miles of the shore, but then had 6 $\frac{1}{2}$ on a small knoll, then 17, and so on for some distance. The peak of Baniack S. W. by W. 7 leagues, they sent their pinnacle to sound for a rock, said by the pilot to have only 2 fathoms water; she found upon it 3 fathoms, except upon a small table which had but 2. When upon this rock she was 2 miles off shore, the peak bearing W. S. W. and a stump of a tree, which seemed to be laid on the beach on purpose, E. N. E. so that the bearings laid down by the pilot, though pretty near, are not quite exact.

"There are," says Captain Hall, "several islands about the south end of Poolo Baniack, the two southmost of which are very remarkable, being both round islands, and nearly of the same appearance, distant from each other about 6 miles. We came between them in January 1784, in the *Royal Bishop*, rather nearer to the south island, and observed while betwixt them, the latitude $2^{\circ} 1'$ North. In passing them the soundings were irregular from 38 to 33, 25, 21, 19, 23, 28 and 33 fathoms."

All the way from CAPE SITOE, or *Siotoe*, for above 10 leagues along the coast to the northward, is low land, with hills a good way up the country: the soundings are regular from 50 to 10 fathoms, which bring you within $\frac{1}{2}$ a league of the shore; so that coming from the northward, to avoid the sunken rock mentioned above, the safest course is to keep the shore close on board. You may go within $\frac{1}{2}$ mile, till you bring the peak upon Poolo Panjack to bear W. by S. and then you are past it: and, in case of hazy weather, when abreast of Cape Sitoe, sounding, standing from Sumatra to the rock, 13 fathoms is the deepest. When you have 10 fathoms stand back to the main, for the next cast the water shoals to 9, then to 4, and from that to the rock.

From Cape Sitoe, POINT SINKELL appears like an island, and both form a deep bay. They saw from the deck the breakers off Point Sinkell, which reach but a small distance from the shore; they made this point to lie in $2^{\circ} 14'$ north latitude.

Dunder Island is low and full of trees; when it bore S. E. *Poolo Mouse* E. S. E. there is a low sandy island, very little raised above the water, and not $\frac{1}{4}$ of a mile in length, bearing from Dunder N. N. E. dist. about 2 miles; and then it was in a line with *Poolo Mouse*. There is a small island before Broons, eastward, which is called *Keyfers island*: from Point Sinkell to this island is a large bay, and low land.

In coming from the northward they kept Dunder and the low sandy island to the westward, the soundings 12, 9, 10, 16, 21, 20, 22, 24, 26, 27, 28, 29 and 30 fathoms, a safe course. The best anchoring off BANA is the island bearing N. W. by W. of you about 2 miles; within it is a reef that runs quite to the shore, with a low tree on it.

From

From BARROS they saw the famous fall of water on the north-west end of POOLO MOUSEL, or MUSSELAR, which bore S. by W. 5 leagues; it comes from the middle of a high mountain: it is said to be above 30 or 40 yards broad, and falls almost perpendicular above 300 yards.—Latitude of the small island $1^{\circ} 56'$ North. In the month of December strong southerly currents.

Mount Ophir E. $\frac{1}{2}$ N. brings you open of Ayer Bonghi River (a place for gold). The shoal of Gaffer is foul and full of rocks, you must go round it.

Off the PRIAMAN ISLANDS, is *Poolo Pisang*: come round it from the southward in 5 fathoms water, the southernmost island of Priaman E. $\frac{1}{2}$ N. distance off shore 3 leagues, no ground at 95 fathoms. *Poolo Pisang* W. N. W. Padang flag-staff N. N. E. in 5 fathoms. On the bar $2\frac{1}{2}$ fathoms.

From BARROS to PADANG they had good and regular soundings, and anchored in Padang road, the southernmost part of Pisang island N. W. by N. dist. $\frac{1}{2}$ a mile: Padang head N. $\frac{1}{2}$ E. *Poolo Rebel* or *Roba* S. $\frac{1}{2}$ W. in 13 fathoms.

From Padang they went through the Inner Channel, without *Poolo Rebel*, and between that and the Great Marra; at which time, *Poolo Marra* bore W. N. W. dist. 1 mile. When *Poolo Auro* bears S. by W. $\frac{1}{2}$ W. dist. 2 miles, *Poolo Tello* bears S. W. by S. and *Poolo Capas* E. $\frac{1}{2}$ S. *Poolo Tello* is surrounded with breakers, and a spit runs out from the north-west point about a $\frac{1}{4}$ of a mile, and also another from the south-east point about the same distance; it is full of trees, and they had 25 fathoms within a mile of it. They anchored off Moco-moco in 36 fathoms, the flag-staff N. E. $\frac{1}{2}$ E. 3 leagues distant.

The breakers off Aypour appeared 8 or 9 miles out north-easterly; they were in $9\frac{1}{2}$ fathoms, but stood off to the westward, and deepened their water gradually to 23 fathoms, the ground for the most part dark and hard sand, and as they deepened the more oozy.

They were from November 26th that they made the islands Cocos, to the 13th of January, before they arrived at Bencoolen, and had mostly land and sea breezes.

INSTRUCTIONS CONCERNING BENCOOLEN ROAD, POOLO BAY, AND RAT ISLAND.

By Captain JOSEPH HUDDART.

"FORT MARLBOROUGH lies in $3^{\circ} 45'$ south latitude and $103^{\circ} 6'$ East of London, by lunar observation. THE ROAD is said to be all clean; but anchoring with the *York*, August 21st, 1774, the flag-staff upon the fort bearing E. by N. $\frac{1}{2}$ N. *Poolo Point* S. S. E. the Sugar-loaf hill N. E. $\frac{1}{2}$ N. in $10\frac{1}{2}$ fathoms, distant from the fort

* 102° according to Mr. Dalrymple.

about

about 3 miles; on the 29th parted the best bower cable, the weather seasonable, except on the 26th, when we had it blowing fresh from the N. W. with a large swell. In heaving in the cables, we found several pieces of small sharp rocks (one of which, I suppose, might weigh half a pound) amongst the loose yams of the cable, which proved it to have been cut by foul ground: but afterwards always anchored in 12 fathoms or upwards, Poolo point bearing about S. E. by S. the flag-staff E. N. E. Rat island S. W. by S. and found clear ground.

" In this road, the sea sometimes came in so heavy, that on account of the vessel's rolling, we were obliged to lash the sheets in the steerage; and it is certainly preferable, between the months of September and March, (when the N. W. winds prevail so strong upon this coast) for those who do not choose the basin in Rat island or Poolo bay, to anchor within a mile to the eastward of Rat island, in about 15 fathoms; if they are not entirely sheltered from the N. W. winds, yet the shoal to the northward of Rat island must lessen the sea; and in seasonable weather, the boats, to and from Fort Marlborough, may do the same duty, as if the ship was in the road, where they frequently anchor as above; for a sailing boat is confined to one trip in 24 hours, by the land and sea breezes in seasonable weather; besides, in case of parting your cables, you may safely recover Poolo bay, with little or no canvass spread, no gales affecting you, but those from the north-westward.

" In coming into this Road, you may leave Rat island on either side; but if from the southward, when abreast of Buffalo point, keep within 1 mile $\frac{1}{2}$ or 2 miles of the shore, for about a league. W. S. W. from Poolo point, and S. S. E. from Rat island, lies a shoal, upon which the sea sometimes breaks; but when abreast of Poolo point, you may steer N. N. W. for the road. You may also go to the westward of this shoal, between it and Rat island. But if you intend to go to the northward of Rat island, you must give it a birth of 2 miles, for a reef runs off, to the northward of the island, whereon is not above 4 or 5 fathoms water. There are no other shoals, within the road, except those, and the black rocks, which are above water, and bear from Fort Marlborough S. $\frac{1}{2}$ E. from Poolo point N. $\frac{1}{2}$ W. and from Rat island W. $\frac{1}{2}$ N. about 2 leagues.

" POOLO BAY is an excellent harbour, but surrounded with swamps which render it very unhealthy. In coming in you may take Sandy point, close on board at low water, and, if high water, a cable's length is a sufficient birth. The whole bay is clean, (except a spot, where are coral rocks) with even soundings; the best laying is where Sandy point bears North, distant from the Company's Godowns between $\frac{1}{4}$ and $\frac{1}{2}$ a mile. In this bay, the spring tides rise about 5 feet: it is well stored with turtle, and different kinds of fish, and there is a well of excellent water on the south side.

" RAT ISLAND is surrounded by a shoal, dry at low water, and has on the north-east side a gut with 5, 7, to 3 fathoms, which now all the country ships lay in, while taking in, or discharging

discharging goods at Fort Marlborough, or undergoing a repair. With a little attention paid to the mooring of ships, it appears to be an excellent basin; for if by a hard gale of north westerly winds, by which, (though no sea can affect a ship, yet a strong current may), a vessel is forced over the shoal at high water, (the tide rising about 3 feet) she parts an old junk or hawser, and drives again to the south-east side, this basin is so steep to, and composed of so soft coral, that she never receives any damage. They are running a pier, from the head, to extend along the north-west side, in order to break off this current, and it might be made as secure as a dock. Should an European ship expect to be long detained at Bencoolen, it would certainly be advisable to moor in this basin, even in its present situation; the boats being able to make a trip each day, with the land and sea breezes, and no more can be done in the road, where often the sea runs high, and the goods are unsafe in the boats along side; for sometimes the North-westers give so short a warning, that boats, with half loading, are obliged to put off for Poolo Bay."

DIRECTIONS FOR SAILING FROM BENCOOLEN TO THE SOUTHWARD.

By Captain HUDDART.

"**T**O the westward of Poolo Bay is POOLO POINT, to the southward of which, about $2\frac{1}{2}$ miles, is a round bluff point called BUFFALO POINT, which may be seen in Bencoolen road; there is good anchoring for shipping, off it, as to the ground and depth of water, but open to the sea, from 7 fathoms to what depth you please. There is a Doosam, or inhabited village, but a very bad bar, which makes it not used by boats.

"From Buffalo point to MANNA POINT, is about 50 miles; from thence 33 to the bay and factory of CAWOOR: about 25 miles S. E. by E. from Cawoor, lies POOLO PISANG; and near the same distance S. S. E. $\frac{1}{2}$ E. the bay and factory of BENCOONAT. FORTUNE ISLAND is from Benconat, about 24 miles S. S. E. This island lies N. W. by N. and S. E. by S. about 7 miles from Flat point, it is low and full of trees: a ship may ride with safety about 1 mile to the East of it, as well as in Billimbing Bay on the opposite shore.

"It has been a very erroneous opinion, that there are no soundings to the southward of Buffalo point, for we found this voyage good and regular soundings, between Manna and this point, from 12 to 30, 40, 50, 60 and 70 fathoms, sandy ground, and where you may anchor if occasion requires; but when past Manna point; to the S. E. between that and Poolo Pisang, could get no ground till near Fortune island (little): and there you lose soundings. *Note*, there is generally a great swell on the shore, all along the coast.

DIRECTIONS FOR SAILING TO BENCOOLEN
AND ALONG THE
WEST COAST OF SUMATRA, COMING FROM THE SOUTHWARD.

By Captain GEORGE RICHARDSON, 1771.

WE have already taken notice, p. 64, of the passage to Bencoolen in the S. E. Monsoon. Captain *George Richardson*, whose directions have been there transcribed, has added the following ones for ships bound from Batavia to Bencoolen in the N. W. Monsoon, viz. from September to March. "They ought," says this officer, "to make the Sumatra coast as soon as possible, and endeavour to work up along shore, with the sea and land-breezes: you have good anchorage till you pass Crockatore; if you find any difficulty in working up along shore, you may stand to the S. W. till you have got sufficient westing, so as to bring you into Bencoolen road on the larboard tacks. Small ships generally keep along shore, taking shelter under Fortune island (Little) or Poolo Pisang, till they get into soundings a little to the southward of Manna, when they are sure of their passage, by making the most of the land-winds. In coasting along keep within 30, and do not come nearer than 10 fathoms: off Allas there is a long shoal, 7 fathoms close to it, which may be easily seen by the breakers.

"In going into MARLBOROUGH ROAD you ought to keep near Buffalo point in 16 fathoms: you anchor in the road in 10 fathoms, bringing *Rat Island* to bear South.

"On this coast, you ought not to moor, because your cables will be cut in one night, in case of a foul hawze, owing to the sea, and the pitching of the ship; but it is proper to carry a kedge anchor, with two or three hawfers upon it to veer and heave in, in case of its bearing too much strain (which will be seldom the case) from the land-winds; the kedge ought to bear N. E. from the bower-anchor, by this means the bower always rides you from the N. W. and S. E. winds; these are the only winds which blow hard upon this coast, particularly the N. W.

"I would recommend it to all Europe-ships, by no means to go into POOLO BAY, unless they lose their anchors, or want to careen, as they are certain of losing a number of men, especially in the S. E. Monsoon.

"On the west coast of Sumatra, during the N. W. Monsoon you have often S. E. winds, and during the S. E. Monsoon N. W. winds; so that at any time of the year a passage may be got from Batavia to Bencoolen and from Bencoolen to Batavia, with a little patience and perseverance."

A few general observations concerning the winds may be added to those given by Captain *Richardson*.

On

On the west coast of Sumatra the winds from April to October blow generally from the S. E. From October to April the N. W. winds are blowing, and these are very hard.

In the S. E. Monsoon the wind sometimes blows so strong that ships cannot work to the southward, but have been obliged to return to Marlborough after a fruitless attempt for several weeks; sometimes in this Monsoon, about the change of the Moon, the North-westers blow hard for a few days: however in general it is not very difficult to get to the southward in the S. E. Monsoon; nor impracticable to work to the northward against the N. W. Monsoon.—*Note*, That these observations refer entirely to South latitude.

NAUTICAL INSTRUCTIONS

FOR THE WEST COAST OF SUMATRA, COMING FROM THE SOUTHWARD.

Extracted chiefly from those of Commodore JOHN WATSON, in the Ship REVENGE, 1770.

1^o FROM FLAT POINT TO BENCOOLEN.

WHEN about 3 miles from a Flat Point on the Sumatra shore, bearing about N. by E. Fortune island (Little) S. E. $\frac{1}{2}$ S. about 4 leagues distant, you have soundings from 48 to 27 fathoms, sandy ground; and in a bay opposite is BINNANG, the first English settlement on this coast under the resident of Croe: these soundings are mentioned as a ship working into the Straits (of Sunda) might stop here in a calm or little wind. The particular bearings for this anchorage are Fortune island S. E. $\frac{1}{2}$ S. 10 miles, the Sugar-loaf N. E. $\frac{1}{2}$ E. a low point north-easterly.

You have soundings all along shore at about 6 miles distance, and between Flat point and FORTUNE ISLAND, which bears from it about N. W. 4 leagues. It is low and very woody, and about a mile in diameter. As you sail to the N. W. the land is low along shore, and within 2 miles of the Flat point before mentioned you have 28 fathoms, sandy ground.

POOLO PISANG is at the foot of Mount Poogong, a very remarkable mountain, its latitude $5^{\circ} 6'$ South; you may ride safely under that island from a N. W. wind. It is said there is a passage between it and the main, and that a Dutch Indiaman came in that way, keeping close to the main. The water is very shoal and foul a little to the northward, having sometimes 4, then 3 fathoms in spots of coral rocks which you can plainly see. This continues till you open a small rock (on which stands a single cocoa-

nut tree) with the island, when you have 10 fathoms, and deepen quickly to 18, having that depth N. W. from the island. There is a range of rocks, a little to the northward, midway between the island and the main, about one mile from each, the sea generally breaks high upon them: 18 fathoms are found close to the southward of them, 21 to the westward, and 12 to the northward, the last foul ground. There is a bank in the middle of the channel, the breakers bearing about South or S. by E. on which is only 2 fathoms, coral rocks; if there is any channel, it must be between this bank and the main.

You have regular soundings all round the bay, at about $\frac{1}{4}$ mile from the shore, depth 35 fathoms, and in the bottom of the bay, they are found at a greater distance. You will see a rock at this bottom which appears as an island; it is called *Sillaloo*, or *Salallee*; about 2 cables length off it, is foul ground 10 fathoms, and then sandy soundings to 54 fathoms, about $\frac{1}{2}$ of a mile off shore. This is a good and safe place to anchor in the Eastern Monsoon, being well sheltered by Carang-pingan point; off this point you have no soundings two cables length from the breakers.—When Mount Poogong bears N. $\frac{1}{4}$ W. it is in one with Poolo Pisang.

Here is *CROOE*, an English settlement, and at high water a pinnacle can go into a little river, which empties itself close to the northward of *Sillaloo* rock.

The coast from Carang-pingan, which is a low point, to Seycoon or point Bandar, the west point of CAWOOR, lies about N. W. by W. and S. E. by E. you have no soundings. 3 miles off the shore; you anchor in Cawoor Bay, in 15 fathoms opposite to the factory. Your boats go in shore to the factory between 2 coral banks, having breakers on each side: the passage is narrow; and about 100 yards to the westward of the factory, you will see a small black rock, on the western bank, which you pass very near, keeping it on the larboard hand. Steering out to the westward, you have regular soundings from 17 to 42 fathoms, sand and shells, a little without the bay, then you lose soundings.

MANNA lies about 11 leagues N. W. by W. from Cawoor: 4 or 5 to the eastward of Manna you will observe *Red Cliffs* bearing about N. E. at the same time Manna point bears N. W.; this point is very remarkable, being a small hill with palm-trees growing upon it like summerheads; you have no soundings, at 50 fathoms, till you get within 2 miles of the point, then 14 and 9, clay ground. A reef runs off from Manna point, and you must keep in 14 fathoms to round it.

You have soundings from hence to Fort Marlborough from 10 to 30 fathoms water, according to your distance off shore; latitude of Manna $4^{\circ} 30'$ South.

"Steering N. N. W. the wind N. E. along shore in 14 fathoms water, distance about 2 miles from the shore, came," says the commodore, "on a bank; had 9 fathoms, rocks, bore away W. by N. and had next cast 15 fathoms; sent a boat away to examine this bank; they found it extending along shore about $\frac{1}{4}$ mile and very narrow, the least water upon it 7 fathoms; and in shore 12 fathoms, soft ground, and 7 fathoms near the shore.

This

This bank lies off a low point, about 4 miles to the eastward of Buffalo point, which is the extreme in light, bluff and very thick with trees; when about 5 or 6 leagues off shore here you lose soundings.

"From Buffalo point to Manna point is 10 or 11 leagues; the land between it, I judge to be about N. W. and S. E. it has been a very erroneous opinion that there are no soundings to the southward of Buffalo point, for the *Somerset* had good and regular soundings between that and Manna point, from 12 to 30, 40, 60, and 70 fathoms, sandy ground, where you may anchor if occasion requires; but when past Manna point to the S. E. between that and Poolo Pisang they got no ground. N. B. Here runs a great swell on the shore.

"Standing in from the westward," continues the commodore, "between Rat island and Buffalo point, kept a good look out for a *Bank* laid down in one of my charts. Sent a boat to keep a head of the ship, and make signals if she came into shoal water; we steered N. by E. with a light breeze at W. N. W.

"At $\frac{1}{2}$ past 6 observed the boat to make a signal for danger, had then 25 fathoms, prepared to tack; next cast had 13 fathoms, coral rock; put about, had 8, 6. Bore away S. by W. as we came on, had 10, 13, 15, 20 fathoms, soft ground, then steered E. by N.

"The boat bore about N. E. from us $\frac{1}{2}$ a mile, and had 4 fathoms; and, in a cast or two, was in 16 and 18 fathoms, hard ground, then 20, soft. Mr. *White*, chief mate of the *Osterly*, told me he had founded all over this bank, but found no where less than 4 fathoms upon it, all coral rock.

"We worked all night between this bank and Buffalo point, keeping between 12 and 18 fathoms. At 6 A. M. anchored in the road.

"Off Buffalo and Poolo points, lie *Two dangerous shoals or reefs* on which the water breaks sometimes, and we failed without them; when Poolo point bears N. 76° E. you are to the northward of the north shoal. The passage between Buffalo Point and this bank is very safe and 4 miles wide, and the same between it and Rat island."

The best anchoring in BENCOOLEN ROAD is mid channel between Rat island and the breakers, for near Rat island the water is deeper and foul ground; there is an inner road, within the North and South breakers, which has 5 fathoms water, where sloops and snows sometimes run into for the convenience of loading and unloading; it being near 3 miles for boats to go into the great road.

The following directions for boats to enter the North and South Channels may also serve for other vessels, they keeping mid-channel; the southern channel is narrowest, but has the deepest water.

The marks for going through the North Channel (which is to be chosen with the winds northerly) is to bring the Sugar-loaf and Rat island N. E. and S. W. then steer in, keeping.

keeping the Sugar-loaf so, and this will carry you in mid-channel between the North and South breakers, soundings 4 fathoms.

When the southerly winds blow the South Channel is preferred, which is round the south point of the south breakers, and between them, and the breakers on the shore.

In going on shore from your ship keep the Company's hospital, which is to the southward, on your starboard-bow or right ahead, till you come near the shore or south point of the rocks, then you will have the channel open and the south breakers without you; then steer right in for the Sugar-loaf, keeping nearest the breakers from the shore, till you have the fort on your beam; then steer in for the Carang or landing place: the passage into it, lies close to a bluff red point with a grove of trees on it; then keep to the westward to the landing place; about 150 yards without the shore lies a ledge of rocks from the shore, which keeps it safe for boats even in a strong N. W. wind.

FORT MARLBOROUGH (in 1770) has two of the bastions entirely demolished and the others much shaken; but the curtains are entire; the French did this and burnt all the houses: the country looks very pleasant, and, if properly cultivated, fit to produce every thing both for profit and pleasure; it is now esteemed very unhealthy.

SILLEBAR RIVER lies in the bottom of a bay, about 10 miles to the southward of Marlborough; it would be much more convenient for fixing the settlement there, as the ships would then ride in safety in POOLO BAY; which is secured from all winds, and where you can with great ease careen and refit your ships close to the shore, and sail out readily. The country about Sillebar might be easily cleared, and would soon pay the expence of clearing it, as it is a very rich soil, and on both sides the river fine plains, the fittest on the coast for producing sugar canes; besides, you would have the convenience of water-carriage to your settlement, which must create a great plenty of every thing, especially amongst such lazy people as the Malays, who hate to bring any thing from a distance; and another great advantage would be the safety and expedition in loading and unloading ships.

"It has been objected that the country, thereabouts, and particularly Poolo, is very unhealthy, yet we had a residency at Sillebar; and the gentlemen kept their healths very well; and I have been assured by doctor *Stevenson*, a gentleman who has resided many years on this coast, and has carefully considered the country about Sillebar, that he thinks its situation very healthy, and that the water is extremely good; at Poolo there is a general complaint against the water, but ships can be much easier supplied with water from Sillebar than they can from Marlborough."

2° FROM BENCOOLEN TO MOCO-MOCO—INDRAPOUR—PADANG, &c.

IN sailing along shore to the northward, be sure you give single Deman Point a good birth, by reason of the foul ground and rocks that lie a considerable way off it. Your best way is to keep the shore on board, that you may not be deceived by the high land, which often shews itself in many different shapes, according to the weather. A little to the northward of single Deman point you will see red cliffs, when you may run into what depth you please, as 9, 10, and 11 fathoms, and out to 20 fathoms. You will meet with good oozy ground for anchoring all the way, if occasion requires, until you come near Ipoe (as hereafter mentioned), when you will lose sight of the Red cliffs.

From Bencoolen to CAYTONE is about 6 or 7 leagues, N. W. by N. it appears with an opening between the Red cliffs like a river: from thence N. W. about 2 or 3 leagues farther lies SIBBLAT, which appears also with an opening between the Red cliffs like Caytone.

From Sibblat, or Sablat, to *Aypour*, called also IPOE, the course is N. W. 2 or 3 leagues. To the S. W. of Ipoe runs out a bank of foul ground from the shore, extending near 2 leagues into the sea: you will find upon it, from 6 to 10 fathoms, large coral: on the outer edge of it there lies a coral-rock, S. W. by S. 2 leagues from Ipoe, with no more than 14 feet water on it (on which the *Swallowfield* struck), and from 8 to 16 fathoms round it; but come no nearer than 10 fathoms, it being very steep, and but a little way off it 30, 40, and 50 fathoms, and then presently no ground. When you bring Ipoe N. E. by E. you are past the bank, that is to the northward of it, and may safely stand into Ipoe road, where you will see, a little to the southward, three red cliffs, like country boats sails, called Tombongoes, and three green hills, if clear weather, without these; the middlemost of which is that on which the old Paggar stood, bearing N. E. by E. the extremities of land, from N. N. W. to S. E. by E. large ships should come no nearer to anchor than 9 or 10 fathoms, the road being clear, but within is shoal water and foul ground.

Between Ipoe and BANTALL are 3 rivers, Ayer-Kuttah, Etam, and Trimang. About 6 or 7 leagues to the northward of Ipoe lies Bantall, in a deep bay; you may stand into what depth you please, after you are past Ipoe; but keeping off shore, from 15 to 7 fathoms, you will find good ground, and even soundings: in crossing the bay for Bantall there is a small red cliff, which is the north point of Trimang river, pretty low near the water's edge, and the only red cliff discernible between Ipoe and Moco-moco: when you see it, you may be certain where you are, and then look out for Bantall river's mouth; you may perceive it as you advance to the northward, if you keep in 6, 7,

or 8 fathoms, which may be safely done; and a little to the southward of some straggling pine-trees, you will see the houses and river's mouth, to the northward whereof are two white cliffs, which in the offing appear much like boats sails: these marks, in clear weather, may be seen a considerable way, and by them you may depend on knowing the places, in case you descry no other. It is a very good road to anchor in; when you have the river's mouth N. E. and the two above-mentioned cliffs N. N. E. you are then in the best of the road, and may anchor in good sand and oozy ground, from 8 to 9 fathoms.

About 4 leagues N. W. from Bantall is AYER-DICKET, whose river has a large bar, which renders it unnavigable, even for boats: when you are near it you will see the river's mouth open, and may easily discover it, by a parcel of tall trees that stand thicker on each side of the mouth than any where else.

About 3 leagues N. W. of Ayer-dicket lies Moco-moco: all the way between them is white sand, and generally a great swell, heaving in upon the shore. A little to the northward of Ayer-dicket is a bluff point, full of trees, called Buffalo point; you must be sure, if bound to Moco-moco, to keep it well on board, by rounding it in 6 or 7 fathoms, which may be done without danger; otherwise you may miss the port: after you are about it, you will perceive a tall spiral tree, standing a little to the northward of the river's mouth, and appearing at first sight like a flag-staff; to the southward of this, as you open the bay, you next see a long house, which makes like a row of buildings, being the Dattie-Bugase's house: then next look out for the flag-staff and Paggar, which you will not discover until you are shot well to the northward. You may at pleasure anchor in Moco-moco road, from 6, 7, to 10, 11, or 12 fathoms, soft ground; the flag-staff bearing from N. E. by E. to S. E. by E. according to the Monsoons, for the conveniency of boats coming on board, or going on shore.

As you sail along shore, Moco-moco appears in the bottom of a small bay, and clear of trees; when you have the bay well open, if to the northward, you may see the houses and factory in the middle of the clear; on each side of the bay stands a row of tall pines, which make both extremes appear bluff; but in the morning, if not very clear, you can hardly see houses or factory, until the Sun is 3 or 4 hours above the land, by reason of the shade the land and trees make which are at the back of it.

W. N. W. about 3 leagues from the flag-staff, there is foul ground, rock and sand, by which, coming from the northward, you may know you are near Moco-moco, in case you have not an opportunity of seeing the land or flag-staff; soundings upon it are from 35 to 18 and 11 fathoms, and doubtless less water, for it breaks very high.

Never depend on your distance, run any where along this coast, as there are very strong currents, frequently running above 2 knots an hour and very uncertain, being chiefly

chiefly influenced by the shifting of the winds; for a twelve-hours gale along shore will occasion a current, as I have found by experience."

N. B. If a ship should be in want of water whilst she is to the northward, the natives will bring it off to you: their usual price has been 8 dollars for 6 puncheons: but your own boat cannot supply you by reason of the great surfs and shoal water there is on the bars.

The next settlement to Marlborough is *POLLEY*, distance about 7 leagues, then that of *LAYE*, off which the soundings are regular, and the first red cliff is seen between Polley and Laye. The next settlement is *CATTOWN*, in latitude about $3^{\circ} 30'$ South: off this place you have very irregular soundings, rocky ground, for 7 or 8 miles from the shore, and breakers a little to the northward near one mile from it. A white cliff like a castle stands to the southward of Cattown: *SABLAT* is next, and subordinate to the former.

The next settlement is *IPQZ*, or *Aypour*: between this and Cattown you have no soundings 4 leagues from the coast, and when you get soundings, you shoal your water very quick to 7 fathoms, hard black sand, above 3 leagues off shore.

MOCO-MOCO is in latitude $2^{\circ} 37'$ South. As you come from the southward, you will see a large opening which is *Mandoota* river, and you must anchor near it, as the mouth of *Moco-moco* river is near this, and 3 miles to the northward of the flag-staff. The *qualo* or bar is very dangerous.

INDRAPOUR POINT lies about 15 leagues to the N. W. of *Moco-moco*; it is very remarkable, being woody and low, and forming a deep bay, as the coast then lies to the N. E.; its latitude is about $2^{\circ} 15'$ South. You have deep water off this point, and there commence the Dutch districts.

AYER-RAJA, their first settlement, lies about 12 miles to the North of *Indrapour*; you have good anchoring in the road in $5 \frac{1}{2}$ fathoms, clay ground. In standing into the bay there is sandy ground from 20 to 10 fathoms, afterwards clay: as you round *Indrapour* point you will see a remarkable round hill, near the water-side, covered with wood and appearing black and longer than any near the shore; it lies about 4 miles to the northward of the river's mouth; if you steer North, and N. $\frac{1}{2}$ E. from *Indrapour* point, it will lead you into the road, in 8 fathoms water. The Dutch ships anchor farther out in 14 or 16 fathoms, that they may be able to clear *Indrapour* point, if they cannot ride in a N. W. wind.

The *Paggar* or settlement is 2 miles up the river, and not to be seen for the woods; by the flag-staff are 2 or 3 little bamboe huts.

Now the navigation along the coast is troublesome and dangerous, on account of the many shoals and sunken rocks in the passage: "We continued," says the Commodore, "plying to the northward all day, working between $7 \frac{1}{2}$ and 16 fathoms; observed a *Sboal* to the northward appearing to lie 2 or 3 miles from the shore; which by standing in-shore

we brought in one with the northernmost extreme of land appearing like a high small island, and a remarkable bluff point appearing nearly the same either from the northward or southward. Sometimes in hazy weather this shoal does not break; but I think the foregoing bearings are sufficient to direct you when near that danger. You have 15 and 16 fathoms 4 or 5 miles to the westward of it."

PADANG, the head-settlement of the Dutch, lies about 27 leagues N. N. W. nearly from Indrapour point: the fort is situated within 40 yards of the bank of the river, being a square with four bastions of stone, and the walls about 9 feet high; it is surrounded, except to the river, with a wet-ditch about 4 or 5 yards over, and from 4 to 6 feet deep. On the opposite side of the river are high mountains, which extend to the mouth of the river, from whence you may see every thing in the fort, and are not above 300 yards distance.

It is shoal water for near 2 miles without the river's mouth, though there is 2 and 3 fathoms at high-water, and about 10 feet on the bar; you go in round Padang head, and when in the river, in a small-bay under the saddle or foot of the head, is water enough for sloops and small vessels; you must keep close to Padang head going in, as the entrance is very narrow, and a sand is thrown up on the opposite shore, by the breakers and the eddy of the river, you have a shoal-water above the garden-house: after you pass the garden-house, which is the first above the saluting-battery on the starboard side, you row over for the larboard shore, and keep near it, until you come to the stairs or landing-place.

The water here is very good, running from the rock, and is conveyed by bamboes in many places on the starboard side, so that your boat may haul under them and fill; the largest is about 200 yards above the first. There is plenty of cattle at 4 to 5 dollars per head [but the English pay 8 Spanish dollars], twelve ducks for a Spanish dollar, fowls more, besides limes, oranges, pumpelmoses, and other refreshments.

The natives are highly disgusted with the Dutch for sending Tuaneco (which in their language is Lord of Lords) a prisoner to Batavia; I was told it was because he ordered "that no person should cultivate their grounds:" on that account they have had no trade, inland, for some months."

You may lay under POOLO PISANG, which is off Padang head 3 miles: when it blows hard at N. W. your boat cannot pass, as the breach is very great; but your ship is well sheltered from the N. W. winds by the island, if you anchor about 2 cables length from the shore; and it is steep to the coral bank, with which it is environed about 40 yards from the shore. There is water on the island, by digging wells 4 or 5 feet deep at the foot of the hills, but the Dutch say it is unwholesome, being impregnated with salt-petre; though it is soft, and tastes very well: the wood is but indifferent.

There is a channel of 6 and 7 fathoms water all round this island (Poolo Pisang), but narrow; and close to the shore, within a cable's length, it shoals 5 to 4 fathoms, then.

then 3; this flat lies between a small round island, and in-shore of Pifang, along to Padang, and so far out, that when you have Poolo Mara well-open to the westward of Poolo Pifang, and about $\frac{1}{2}$ mile from the latter to the N. W. you find only 4 fathoms, sand, and in some places 3 and 2 fathoms. Between the small sandy island 3 miles from Pifang, and the north point of the bay, off which it lies, are very uneven soundings and hard ground, from 4 to $2\frac{1}{2}$ fathoms in some places, and this continues near $\frac{1}{2}$ mile to the West of the sand, when you come into 10 and 12 fathoms water.

South 19° E. from the body of Poolo Pifang lies a rock on which it breaks sometimes: between the sandy island and this rock you have 7, 9, 12 to 13 fathoms, and to the westward, about one mile to the sandy point, there is from 13, to 9, and 13, and then 12, 9, 7 fathoms to Poolo Pifang.

Poolo Senaro is a small island bearing from the west point of Marra N. by W. and S. by E. its latitude correct is $0^{\circ} 48'$ South by an observation.

Poolo Dua and *Senaro* in one bear W. N. W. $\frac{1}{2}$ W. and E. S. E. $\frac{1}{2}$ E. and *Poolo Musquito* a little to the westward; northward of this island lies a coral shoal stretching N. W. and S. E. about $\frac{1}{2}$ mile.

A *funken shoal* is said to lie between Poolo Pifang and Marra about half-way, which rarely breaks, having 2 fathoms water on it.

Off Padang lie 7 islands, amongst which are several dangers; they are called Poolo Sato or 1st, Poolo Dua or 2d, Poolo Teega or 3d, Poolo Ampat or 4th, Poolo Leema or 5th, Poolo Annam or 6th, and Poolo Toojoo or 7th.

POOLO SATO is the smallest and easternmost, and bears from Pifang about N. W. 6 or 7 miles.

Poolo Sato, Dua and Teega bear about S. W. and N. E. of each other; DUA is a little bigger than Sato; by the charts there is a channel between them, it bears from the island Senaro W. N. W. $\frac{1}{2}$ W. about 3 leagues.

TEEGA is the largest and southernmost, between it and Dua are laid down many rocks and shoals which seem to stop the passage; it bears from Poolo Pifang S. W. by W. 3 leagues.

POOLO AMPAT is about the same bigness as Dua, and lies to the westward, bearing from Poolo Lema S. W. $\frac{1}{2}$ S.

POOLO LEMA is a small island and one of the innermost; between it and Sato are some breakers, and the same between it and Ampat; to the northward it is clear, but has a reef of rocks to the S. W. extending about 2 miles from the island.

POOLO ANNAM appears to be the last island coming from the southward, as Toojoo is not in sight; it is one of the largest, and has some shoals laid down between it and Ampat, and to the northward of it.

Toojoo is the same as the others in size; N. W. by W. 3 leagues from it lies a coral bank, on which are soundings 5, 7, 9, 10, and then no ground; whether there is less water upon it is unknown, therefore it must be approached with caution; this island bears from Poolo Cassey, to the northward of the Priamans, S. W. by S. $\frac{1}{2}$ S.

POOLO SOW or AYER is a small island to the northward of Poolo Pifang, and about $1\frac{1}{2}$ mile from the shore; it has breakers off it to the southward about $\frac{1}{2}$ of a mile; there is a shoal laid down in the chart South from it, and one about S. E.; it bears from Pifang N. by W. about 5 leagues.

When you are 3 or 4 miles to the northward of Poolo Sow or Ayer you then come in on a flat, having 6 fathoms above 2 miles from shore.

3° FROM PADANG TO AYER-BONGY.

PRIAMAN lies about $7\frac{1}{2}$ leagues to the N. W. of Padang: the 1st and 2d Priaman islands bear S. S. E. $\frac{1}{2}$ S. and N. N. W. $\frac{1}{2}$ N. distant about 2 miles. The 2d and 3d distant $1\frac{1}{2}$ mile are about $\frac{1}{2}$ mile in extent each; the northernmost is the smallest and has a well of fresh-water on it, where all the Dutch vessels supply themselves. You have a good shelter under any of the three from the N. W. winds; there is a passage, between the north island and the main, for small ships; it shoals from it to the main gradually from $3\frac{1}{2}$ fathoms, hard sand, to 2 fathoms, mud near the shore.

The next island is POOLO CASSEY, about 50 yards in diameter, full of trees; it bears from the northernmost island N. W. $\frac{1}{2}$ W. distant 4 miles, and from the main 2 or 3 miles; you have regular soundings between them of 7 and 8 fathoms. And round Poolo Cassey on the east side, 6 and $5\frac{1}{2}$ mile from it, and gradually decreasing to 2 fathoms within $\frac{1}{2}$ mile of the shore, all soft ground, sand and clay.

There is a bank off Priaman river, on the north and south ends of which are two spots of sand which shew themselves; within it you have 2 fathoms, sandy ground: to the N. N. E. of Poolo Cassey, and half way to the shore, is laid down another spot of rocks, which is all that is in the bay.

From the southward, as far as the TICOO ISLANDS, extends a flat, along shore, having only 5 fathoms above 2 miles from the shore, and decreasing gradually; by keeping your lead going you can borrow on, or haul off the shore.

To the westward of the Priaman islands are several shoals on which it sometimes breaks; they are between 2 and 3 miles distant from the islands in about 15 fathoms water; but you have a good passage between them and the islands, by keeping near the

the latter, from 10 to 7 fathoms, till to the southward of the First island, when you deepen to 12 and 13 fathoms.

"If the wind serves, I would advise a ship to keep the inner passage; going to the eastward of the First and Second Islands at about $\frac{1}{4}$ mile distance, or nearer as the deepest water is close to them, 5 $\frac{1}{2}$, 6, and 7 fathoms, but towards the main you shoalen fast and have harder ground; then steer for the third or northernmost island, giving the west end a birth, for the breakers are two cables length from the shore, and within pistol-shot of them is 7 fathoms; then steer for Poolo Cassey; you may pass on either side of it; if to the eastward, you will have 6 fathoms near it, but you must steer N. W. by W. for on a N. W. course you will shoalen to 4 fathoms, sandy ground."

When you have Poolo Cassey East, then you are abreast of the northernmost shoal, from which it is distant 2 or 3 miles.

Poolo Toojoo bears from Poolo Cassey S. W. by S. $\frac{1}{2}$ S. about 5 leagues. When the Outer Ticoo island bears N. N. W. northerly, and the third or northernmost of the Priaman islands S. E. $\frac{1}{2}$ E. it brings you on a *Shoal*, close to which is 8 fathoms, then 3, the water being discoloured over it. However the *Duke*, Captain *Powney*, passed between two shoals bearing about S. S. E. from the Ticoo islands distant 5 leagues, and had no ground at 35 fathoms.

PRIAMAN is a Dutch settlement; the river is small, a pinnace cannot go in until near high water (you land on the right-hand side). It lies within the coral bank before mentioned, and the flag bears S. E. $\frac{1}{4}$ E. from Poolo Cassey.

The coast from Padang to this place is low and flat.

From the Priaman islands to the Ticoo islands, the navigation is safe if under 16 fathoms, and to 6 in shore; without that depth is a shoal, on which it breaks sometimes, bearing about N. W. by W. from Poolo Cassey and S. E. by S. from the Outer Ticoo island; you have 20 fathoms close to the eastward of it. Outer Ticoo bearing N. W. $\frac{3}{4}$ N. and Poolo Cassey S. E. there are breakers bearing from West to N. W. distance 2 miles, depth 16 fathoms. Another shoal is lying S. W. by W. distance about 3 miles from the Great Ticoo; when the outermost and innermost Ticoo islands are in one N. E. $\frac{1}{4}$ N. and distant from the former $\frac{3}{4}$ mile, depth 16 fathoms. You may see the roll of a swell on this shoal, distance between 2 and 3 miles. Southward of the Ticoo islands there are several shoals; the coast is all clear within them from Poolo Cassey to the Ticoo islands; within 6 fathoms $1\frac{1}{2}$ mile or 2 miles from the shore, the ground is a stiff clay full of broken rotten coral, like small stones.

The coast, from the Priaman islands to the Ticoo island, is a little hilly; and lies about N. W. by W. and S. E. by E.

The Ticoo islands are small and woody, about $1\frac{1}{2}$ mile distant from each other, and the innermost $1\frac{1}{2}$ from the main.

As you sail from the southward there appears a number of breakers among the islands, which seem to stop the passage; but the channel between the middle and inner islands, is safe and good; off the south side of the inner island is a shoal for near $\frac{1}{2}$ of a mile, having $5\frac{1}{2}$ fathoms, soft ground close to it; in the channel is a small coral bank, wore with the water, and about a cable's-length over; it is about $\frac{1}{2}$ of a mile from the innermost, and about $\frac{1}{2}$ of a mile from the middle island.

It is steep to, all round; between it and the inner island, $6\frac{1}{2}$ close to it; 7, 7, $6\frac{1}{2}$, 6, 5 fathoms close to the island; between the shoal and the middle island the channel has deeper water and is narrow, occasioned by a spit off the north-east end of the island distance two cable's-length, soundings 7, $7\frac{1}{2}$, 8, 8 and 9 fathoms near the Spit: the other channel is best, as you have it broader and good room to anchor; in both it is soft ground.

After you have passed the shoal going to the northward, and keeping N. W. you will regularly deepen your water to 12 and 14 fathoms. To the South of the middle island about $\frac{1}{2}$ mile distant there are some rocks on which it breaks; of these you must take care if you run under the islands for shelter from the N. W. winds.

When you leave the Ticoo islands you will see *Massang Point*, on which grow trees appearing like bamboes, they are called pines; off this is foul ground, so that you must give it a good birth. The next point you open is *Oujong Raja*, which appears bluff like trees; there are three remarkable small hills here, called the Massang hills, about 2 or 3 miles from the sea-side; the southernmost of which makes like a table, and the two others like hay-cocks; you may approach the shore safely to 12 or 15 fathoms. At Massang town is a great resort of Malay craft, as they have never suffered the Dutch to settle in their country. All the coast is low land from the Ticoo islands to the south point of Ayer-Bongy Bay; this is as high as Padang head, and appears at first like an island; the coast, from the Ticoo islands to it, tends to the northward and forms a bay: here are several shoals to the southward of AYER BONGY SOUTH POINT, which is called *Oujong Seecarbow*, and in the Charts *Oujong Gardja*.

You can pass about mid-channel between the southernmost shoal and two to the northward which appear as one, having 16 fathoms.

When Seecarbow point bears N. by W. then this shoal and the two northernmost are in one S. S. E. distance between the shoals 1 mile; the two northernmost are about a cable's length distant from each other, and from the point about 4 miles.

When POOLO TELLORE bears N. W. $\frac{3}{4}$ W. these two shoals are in one with it; it being then within the northernmost point of the bay, a sail's-breadth. There is another shoal in shore off Tellore, on which it breaks, bearing N. by W. and from Tellore E. S. E. about 2 miles.

There is likewise a shoal with breakers, between the Island *Telbore* or *Poole Tanga* and Ayer Bongy, bearing N. $\frac{1}{2}$ E. 1 mile.

W. by N. 1 mile from *Poolo Sambo* lies a third shoal on which it breaks, which when in one with *Poolo Pancel*, bears S. E. by E. westerly. About North 1 mile distance from *Poolo Panjang* lies a fourth shoal on which it breaks.

You can sail in with safety from the N. W. between *Poolo Sambo* and *Poolo Panjang*, in 7 and 8 fathoms, giving the island a berth, and run into $5\frac{1}{2}$ fathoms under *Poolo Panjang*, where you can anchor.

In sailing past the shoals to the northward of *Ayer Bongy* in the day-time there is no danger, as they all break, and have good channels amongst them; there is a shoal a little to the westward on which is 2 fathoms water; and which is placed in 25 fathoms water in the Charts.

Ayer Bongy is situated on the south-east side of a deep bay amongst the hilly part; it has a river and the Dutch have a settlement here since the year 1754.

4° FROM *AYER BONGY* TO *NATTAL* AND *TAPPANOOLT*.

MOUNT *Ophir* bears East of *Seecarbow*; it is remarkable for its great height appearing like an obtuse cone, and separated from the other chain of mountains, so that it stands single about 15 or 20 miles inland.

Between the north side of *Ayer Bongy Bay* and *Poolo Tamong* are some deep bays; and you have good soundings to 5 fathoms within a $\frac{1}{4}$ mile from the shore, and 10 fathoms about 2 miles distance; you deepen quick to 17 fathoms, and then gradually as you stand off, so that it is advisable to work up near the shore to avoid a coral bank, uneven soundings from 18 to 6 and 12, &c. and may have less water, when on it.

On *POOLO TAMONG* you will find good water and wood; there is a clear passage all round; you anchor in 8 or 9 fathoms, about 2 cables length of shore, bringing the south side of the island to bear W. S. W. where you are well secured from the N. W. winds.

Poolo Tamong and *Caracara Point* form *NATTAL BAY*, in which are many dangerous shoals; some of which with breakers; many ships coming into and sailing out of this road have struck on some of them: it is very difficult to give directions for shaping courses to avoid these dangers, which reach out into 17 or 18 fathoms.

To sail into *NATTAL ROAD* from the southward keep in 16 and 17 fathoms till *Nattal hill*, which is low and to the northward of the river, bears E. by S. then steer in, keeping it so, and you will shoalen your water regularly to 7 fathoms, where anchor 2 miles off shore, the flag-staff bearing East. If you come from the northward, you may keep in 16 fathoms, until you have the above bearings.

In

In going into Nattal road, says the journal of the *Asia* in 1770, *after you have 14 fathoms bring Nattal hill to bear E. S. E. (and by no means to southward of that) round Caracara point about 4 miles and not less, for off this point lies a dangerous shoal, on which is from $\frac{1}{2}$ 5 fath to $\frac{1}{2}$ 2 fathoms, hard on one cast, and when the island bears N. E. by N. you are clear of it. Do not fear keeping well to the southward of this shoal, as the channel is 3 miles broad, and after you shoal to less than 10 fathoms the rocks are all without you; haul to the southward at discretion to get in your anchoring birth; it is common to bring the flag-staff E. by N. and lie in 4 fathoms, but the *Asia* came to in $5\frac{1}{2}$ fathoms. There is not the least shelter from N. W. winds, which however are not violent or of long continuance to the northward of the Line. This place lies in the latitude $0^{\circ} 29'$ North.

When you have opened Caracara you will see several small islands; the southmost is called the *Capuchin*, and by the natives POOLO CAPECHONG; it lies very near the shore under Caracara; the second is POOLO TELLORE, near which lie two small shoals. POOLO RINGAWAN is a small round island to the northward of Tellore, and POOLO ZELADY is the outermost island.

POOLO TABOONYONG, or *Moody*, is easily known by a high rock off its west side; on it you have good water, plenty of cocoa-nuts, and safe riding from a N. W. wind, there being 4 and $4\frac{1}{2}$ fathoms water all round, soft ground; it is about 7 or 8 miles distant from the shore.

The next island is POOLO ELY, larger than any of the former, about 1 mile in length, pretty high and even; it is about 7 leagues distance from Zelady; you may anchor safely under it, and it affords wood and good water. From Poolo Ely to the SUGAR-LOAF your course is N. by W. $\frac{1}{2}$ W. distance about 4 leagues, good soundings along shore; between POOLO BACCAR and the Sugar-loaf is an open passage, with soundings from 14 to 19 fathoms; off the north-west side of Baccar a shoal runs off about a cable's-length; and off the north-east side of the Sugar-loaf, runs likewise a small shoal about a cable's-length, the other parts are steep to.

To the southward of *Musselar*, or *Massular*, are many islands, which open as you come near the bay; these islands and *Battoo Mama Point* form the southern passage into the BAY OF TAPPANOOLY, or *Tappeanooley*, about 4 or 5 leagues wide; and *Massular* and *Pattoo Booroo Point* form the northern passage.

In entering between Poolo Baccar and the Sugar-loaf, you find 17 fathoms, the deepest water being near the Sugar-loaf, and you have 12 or 11 fathoms within a $\frac{1}{2}$ mile to Puncheon Gadang; having passed the shoals, and a little island off the north side, within a ship's length of the shoal in 8 fathoms water, you can anchor in 7 about 2 cables length off Poolo Puncheon Gadang, within 20 yards of the shore. E. N. E. from this is a bay about 4 miles deep, the north side of which is made by an island called POOLO SEEROODOOT, which has a passage round it, 3 fathoms between it and the main, but

but very narrow; you shoal your water gradually from Puncheon Gadang from $7\frac{1}{2}$ to 5 fathoms at the entrance, then $4\frac{1}{2}$, $4\frac{1}{4}$, $3\frac{1}{2}$, 3, and $2\frac{1}{2}$, at the bottom of the bay, soft mud.

POOLO PUNCHEON GADANG has some high steep hills on it, all covered with large timber; near the foot of these hills, which are clay ground, you have several springs of very good water.

Between Puncheon Gadang and Poolo Seeroodoot is 2 miles, with 8, $7\frac{1}{2}$, and 6 fathoms, good holding ground, and between it and POOLO PUNCHEON CATCHEEL, on which is a settlement, you have 8, 9, 10, and 7 fathoms; near the latter, the passage is a large mile.

Within Puncheon Catcheel you have 5 fathoms 2 cables length from it, then 6 and 7; between it and POOLO PANJANG is about $\frac{1}{2}$ a mile, a clear passage with 7 fathoms water; you may also run up within Poolo Panjang and anchor in 5, 6, or 7 fathoms: off the north-east end of it is a coral shoal running almost over to POOLO BOBY, though there is a narrow channel, having $1\frac{1}{2}$ fathom to keep in; you must stand close to Poolo Boby till it is open from the main; then steer over for the west end of POOLO PALLA, which will carry you between this shoal and a shoal that stretches from the main, there is no other passage for a pinnacle; off the west side of Poolo Panjang lie two sunken rocks.

When you come out of the bay and are sailing to the northward, you have a fair and open passage with good soundings 12, 14, and 16 fathoms: about 2 miles from the shore you will see a small island, called POOLO SOCKUM; off this island about 4 miles, lies a sand bank having 8 fathoms, and in some places 7; when you are upon it, the Sugar-loaf island is shut in within the southern point of the bay, and the island bears about N. by W. 4 miles distance.

About a $\frac{1}{2}$ of a mile to the westward of this island is a coral reef, dry in some places; you have 6 fathoms abreast of it, then 7: at 2 cables length distance there is a shoal on which it breaks, lying half way between Poolo Sockum and POOLO PANNY; it is about a mile from the shore. To the southward of Poolo Panny is a small island, and a dry sand with a bush upon it, a mile to the northward of that, having a shoal reaching to the shore; do not come under 6 fathoms, and you will be clear of them all; it is very foul between Panny and Sockum.

Under *Poolo Sockum*, called also *Carrang* or *Cæsar's Island*, is good anchoring for large ships, and you are well sheltered from the N. W. wind; but to the N. W. is a reef, on which it breaks, near a mile from the island; in passing this island to the westward, and standing in for TAPOOS BAY, there is no danger till you are well in the bay, where is a reef on which it breaks, about 2 miles distant from the shore, having 8 fathoms water close to it on the outside, and 4 to $4\frac{1}{2}$ between it and the shore; here is fine shelter, under the point, in the bay, where you may ride safely in what depth of water you choose.

INSTRUCTIONS FOR THE WEST COAST OF SUMATRA, COMING FROM THE NORTHWARD TO BENCOOLEN.

By Captain GEORGE BAKER.

ALL the shoals on the West Coast of SUMATRA are white coral rocks, and can be seen a mile off from the mast head, even when they are 3 fathoms under water, so that by keeping a good man at the mast-head there is but little danger in the day-time.

If you are to touch at Tappanooley, it is best to fall in with the coast to the northward of all the islands, and so go down along shore.

If you intend for Padang at once, it is best to sail to the southward of *Poolo Pingey*; but supposing you go along shore and fall in with the coast to the northward of the islands, observe that there are two passages along shore; one, called the *Outer*, which carries you from 4 to 10 leagues off shore; the other, which is the *Inner*, will carry you from 2 miles to 12; in some places both passages meet: the Inner Passage is esteemed the safest with a leading wind, for the following reasons; you can judge your distance better, by being near the land, and you have shoaler water in case of anchoring, and are not so liable to over-shoot your port; but you labour under this disadvantage, in case you have bad winds, you cannot make so much use of them in the Inner as in the Outer channel.

The next and greatest Malay Port, for trade, is SINKELL; here you may sell blue cloth for 80 dollars per corge, and white for 120; other goods in proportion; but the worst is you are obliged to take Benjamin and Camphire for your payment; although if they are in want of goods you may squeeze gold dust from them. It was here, that the Malays attempted to cut off Captain *Doggan*, so you must be on your guard; Sinkell is a very great mart for salt, iron, steel, and sometimes opium.—In sailing from Bancoongong, (about 17 leagues to the North), to Sinkell you go within *Banjack* or *Banias*, and close by Passage island, leaving it on the starboard hand. Midway between Passage island and the main is a dangerous shoal, therefore you must keep the island or main close on board; it is certainly best to keep hold of the island, all round which it is dry at low water upwards of a cable's length; neither is there any island within Passage island whereby you may be deceived. Having passed Passage island about a league, you may haul in with the main in 10 or 11 fathoms water, and steering to the southward, you will see a large river with an island at the mouth of it; this is *Sinkell River*, but not the place for anchoring: you pass Sinkell river and round the next point, (called *Oujong Raja*) in 6 or 8 fathoms, hard; when you touch soft ground haul up N. N. E. and that will bring you near a low sandy island, which you must keep on the starboard side; between it and the point you may anchor. But if you design to lay 5 or 6 days, it is best to run into 5 fathoms, mud, between a small island (called *Sleaga*) covered with trees, and the main: there you ride safe from every wind that blows: this is the place where

the Sinkellers transact all business; and perhaps you will not see a living soul for two days; however you must wait with patience, for the people must come all the way from Sinkell, and possibly may not hear of your arrival for three days.

Between Sinkell and Baroos, a Dutch settlement, are many small Malay places where traders often do business.

In leaving Sinkell get into 20, 22, or 23 fathoms, mud, and steer along shore for *Poolo Looketta*, between which, and pretty near it and the main, is a low sandy island. This you keep on the starboard hand, and may go within $\frac{1}{2}$ a mile of it; when past, haul in for *Poolo Carrang*, an island which lies off BAROOS, or *Barros*; you may anchor to the southward of it in 10 fathoms, mud, having its body N. W. by W. $\frac{1}{2}$ mile distant. Here is an excellent market for opium and cloth, provided you take benjamin and camphire. There is excellent fresh water at Baroos, and when your boat goes ashore the first time, she must lie off a little way from the shore, until they send a person to conduct her into the river, otherwise you may lose her.

In leaving Baroos steer midway between the main and MASSULAR until you come near the east end of it, then haul over for the main, and you will fall in with, or near, the north point of TAPPANOOLY BAY, which you may pass within 2 cables length, and, going in for the harbour, keep all the islands on the starboard side, and anchor in 7 fathoms, mud, abreast of a small green plot on the larboard going in. It is one of the finest harbours on the Coast. Salt, iron, and steel will answer here and at Nattal. Tappanooly Fort stands on a small hill at the bottom of the bay, and when you are at anchor look towards the North or N. N. E. and there you will see it.

Proceeding for NATTAL, pass near the Sugar-loaf, on the south side of the bay, and steering a little off shore until you have 24 or 25 fathoms, mud. Six or 7 leagues to the southward of the Sugar-loaf is an island, pretty near the main, called POOLO ELY, and about 5 leagues to the southward of that, are two islands called ZELADY; you go without them. To the southward of Zelady, 3 or 4 leagues, is a large and dangerous shoal, on which there are breakers; you may either go within or without it; it is advisable to go without, as having most room: do not bring Zelady to the westward of North until you are past it; and when Cara-Cara Point bears S. E. by E. you may haul in for it, and pass within 2 miles of the point. In rounding Cara-Cara point for Nattal road, take care of a shoal with breakers which lies from Cara-Cara point S. W. $\frac{1}{2}$ W. about $1\frac{1}{2}$ mile distant. The bearings for anchoring in the road are Cara-Cara N. by W. Nattal flag-staff E. S. E. $\frac{1}{2}$ S. and Durian Point S. by E. $\frac{1}{2}$ E. in 5 or $5\frac{1}{2}$ fathoms, mud, and 2 or 3 miles off shore. Nattal road is one of the worst on the West Coast of Sumatra, having often a very large sea and dirty weather, and when the wind blows hard from the westward you cannot clear the shore. There is a great private vend here for opium, cloth, blue and white, iron, steel, salt, &c. but is entirely in the Resident's hands.

Between Nattal and Padang are the two Dutch settlements, called *Ayer Bongy* and *Priaman*, heretofore described.

" About the mouth of Nattal Bay lie many shoals *, therefore when you leave it, keep near Durian point and pass POOLO TAMONG about a league distant. Before or when abreast of Tamong, I think it is best to haul over for Poolo Pingey; at least to keep nearer the small islands within Pingey, than the main; for almost midway between Pingey and the main is a large spot on which are very irregular soundings, from 20 to 5, and from 15 to 4 fathoms, hard coral rock: this shoal lies from Poolo Tamong S. W. by S. about 3 leagues.

" Many are the different tracks from Pingey to Padang, and I think," says the Captain, " the Inner Passage preferable to the Outer one, as there are a vast number of shoals in the offing of the Ticoo islands and Priaman, which must be taken particular care of; indeed I think this the most difficult part on the coast."

" When you are clear of the shoal, lying from Poolo Tamong, S. W. by S. 3 leagues, steer S. S. E.—S. E. by S.—S. E.—and S. E. by E. gradually rounding the shoals of Ayer Bongy (on many of which the sea breaks); and at all events fall in with *Onjong Massong Point*, on which are three small remarkable hills near the shore, and low land all round them: when within 2 or 3 miles of this point, steer for the *Outermost of the Ticoo islands*, which are three in number, and take care of a shoal that lies from them W. by S. or thereabouts almost 2 leagues; you keep within a mile of the Ticoo islands, and if night is coming on, take shelter under the outermost, then about $\frac{1}{4}$ a mile off it, bearing West or W. S. W. in 9 or 10 fathoms.

" In getting under weigh, or passing the Ticoo islands, keep within a league of the main or less, and take care of two shoals; one within, the other without you; keep a man at the mast head, and when you see white or greenish water, steer from it: when you come within a league of POOLO CASSEY, you must steer directly over for POOLO TOOJO, which is the northernmost of all the PADANG ISLANDS; keep this island pretty close on board, and pass to the northward of it; when past it, steer for POOLO LEMA: keep that also on the starboard side pretty close, and when clear of it, steer directly for POOLO PISANO, under which you may anchor in 7 to 5 fathoms, mud, within two cables length of the island, sheltered from all westerly winds: this is the proper place for anchoring, but you may anchor off the mouth of the river, if promising weather, in 14 fathoms. When past POOLO SATO, which is the next island to Leema, you will see Dutch colours.

* Monday the 23d of August 1784, the ship *Royal Bishop*, on her passage from Tappanooly down the West Coast of Sumatra (having a pilot on board) at $\frac{1}{2}$ before 10 A. M. came suddenly on a shoal of coral rocks, a 17 fathoms to 4 and 3, and struck several times, but the coral being soft broke under her keel. The pinnacle being out was sent a-head; and found the shallowest water to be 4 fathoms, except just where the ship struck: on the top of the rocks there was only $\frac{1}{2}$ less 3. The water being remarkably smooth, and the ship having delivered part of her cargo at Tappanooly, drew only 16 feet, by which means she fortunately got off, and deepened to 4, 6, 7, 8, hard ground; 12, 14, 16, soft ground, and then shoaled again, steering in for the road.

The shoal did not appear to be 3 or 4 times the ship's length. Caracara Point then bore N. E. $\frac{1}{4}$ N. Nattal flag-staff E. $\frac{1}{4}$ S. and Poolo Tamong S. S. E. $\frac{1}{4}$ E.

hoisted.

hoisted on a hill, facing to the northward, or, which is a more certain guide, the land near the sea, and to the northward of Padang river is quite low, that to the southward is quite high, and the southernmost point of the river is a pretty high bluff head remarkable enough. If the weather is promising, and you intend but little stay, anchor in 13 fathoms, soft. The Flag-staff bearing E. $\frac{1}{2}$ N. distance off the bluff head half a mile.

" If the weather threatens, and you expect to stay three or four days, it is best to take shelter under PISANG; with small vessels you may go within it, but with large go without, and round it about two cables length off the island: and it is necessary to moor. The Dutch love to be saluted with guns, therefore I would recommend not to spare powder, though your salute is not returned, but it is because their fort is a mile in-land: your plea is want of wood or water, or some other necessity that drove you there, because they must report such to Batavia.

" PADANG is certainly the best vend on this coast, for all kinds of goods; provided they have not lately been supplied from Batavia, you may dispose of whole ships cargoes; but take none of their benjamin, no bar gold, or gold trinkets; only gold dust, which they have in plenty. If they are in want of opium they will give 300 dollars per chest, from 65 to 75 per corge, blue cloth, from 90 to 110 per corge, white, and so in proportion for other commodities.

" In taking of gold dust, that you may not be a sufferer, I would advise you to take aquafortis with you; in proving, take a tale weight of gold dust, put it into a china cup, and pour a little aquafortis on it; if good it will remain pure and unfullied and will not lose in weight; if bad it will smoke and send up a sulphureous fume, and will lose more or less in weight, according as it is adulterated. At Padang, or any other Dutch settlement, they will not suffer you to try their dust: but you must take it as they choose to give it you. True, it is not so good as that of the English, but the prices you get for your goods, balance for the bad quality of the gold dust, and the trying of dust only affects the Malays, so that in dealing with them make them allow a proportion for the whole that is lost in one tale. At Padang you must pay 5 per cent. custom, at other Dutch settlements none.

" When you leave Padang, salute, and steer down for POOLO BOBECK; keep that on the larboard hand, and go within POOLO PERGANY, TELANG and MARRA; this is a bold passage, but vastly narrow; if afraid you may go without them, but I have been working tack and tack through it. After passing Marra steer for BOBY CACHEEL, go on either side; and, passing it, steer for AWOOR BASSAR, keeping it on the starboard side: when abreast of it, look towards the N. E. and you will see Dutch colours hoisted on POOLO CHINQUE; steer for it, and keep it half a point on the larboard bow, and anchor in 12 fathoms. When you go ashore and have agreed to do business, they will send a pilot to conduct you into the harbour: it is here, as at Padang, only no custom; goods bear the same prices, and sometimes more than at Padang.

"Having

" Having done your business steer down along shore in 20 to 25 fathoms water till abreast of POOLO BRINGEN, (keep nearer Bringen than the main for fear of a shoal that lies between them) and then haul gradually over for the main; when Poolo Bringen bears S. W. you may steer East and E. by S. that will carry you near a Dutch settlement called AYER RAJA, where you may do something; it is a very difficult place to find out, without the flag is hoisted, for it is a mile in-land, and it is attended with danger, having no shelter from the N. W. winds; indeed, excepting your business is very pressing, I would not have you to anchor here; however if you do, go no nearer than 8 fathoms, Poolo Bringen bearing W. $\frac{1}{2}$ N. Ayer Raja flag-staff East, and Indrapour point S. $\frac{1}{2}$ W. about 2 miles off shore.

" Here you have no occasion to salute, except the Resident comes on board; if there is any thing of a sea and low water, it is dangerous for boats going into the river, because the surf sometimes breaks high on the bar.

" Being now at Ayer Raja you are past all the islands and shoals worth mentioning as far down as BENCOOLEN; except one to the southward of Moco Moco, which I shall speak of by and by. In leaving Ayer Raja steer for INDRAPOUR POINT, at about a league's distance, and steering down along shore about 4 miles off, until you see Moco Moco fort, which is a large white building near the shore; run into 10 fathoms, mud, and anchor, having Moco Moco fort bearing E. by N. or East; here you cannot attempt going ashore in your own boat, but must wait till a boat comes from the shore to carry you in over the surf.

" From Moco Moco, about 3 leagues to the southward, is a shoal stretching off shore about 5 miles, on which are very irregular soundings, and hard coral rock.

" Come no nearer the shore than 20 fathoms until you get sight of RAT ISLAND, then steer in, midway between Rat island and MARLBOROUGH FORT, anchor in 10 fathoms, mud, having Rat island bearing S. W. Marlborough flag-staff E. $\frac{1}{2}$ N. and Black Rock breakers S. E. by S. $\frac{1}{2}$ S.

" I would not have you venture ashore here unless some of your people are acquainted, for several boats have been lost on the breakers, therefore make a signal for a boat.

" In a case of a hard N. W. gale and large sea, it is best to run down to POOLO BAY, observing the following instructions, viz. go no nearer the black rock than 14 fathoms; when past it, steer down and haul in for *Sillebar*, keeping it a little on the larboard bow; look out a-head on the starboard bow, and you will see a low sandy point called *Poolo Point*; go within half a cable's length of it, and luff round it at the same distance; here you may anchor with safety in smooth water; do not go too near the south-east side of the bay because there are sunken rocks.

" Midway between Rat Island and Buffalo point is a very dangerous shoal, on which I have seen the sea break excessive high, therefore in going from Bencoolen to the southward keep either the point or island on board."

THE

THE PRINCIPAL ISLANDS ON THE WEST COAST OF SUMATRA.

HOG ISLAND—POOLO NYAS—POOLO MINTAON—GREAT FORTUNE ISLAND—THE POGGY OR NASSAU ISLANDS—ENGANO ISLAND.

ALL these islands which lie in a direction parallel to the west coast of Sumatra, at the distance of about 20 leagues, are very little known; and except Good Fortune Island, the Pogy islands, and Engano, we are scarcely acquainted with the others.

HOG ISLAND and POOLO NYAS, which are amongst the largest of the whole range, lie to the northward of the Equator; the others are to the southward of it. The east side of the island called PORA by the natives, and by us GREAT OR GOOD FORTUNE ISLAND, has been explored by captain *John Whiteway* of the *Cuddalore* sloop, in 1750; but he differs widely in the latitude of the south end of the island, from that assigned by the *Snow Jenny* in 1769*; besides making a single island of Pora, whereas the *Jenny* divides it into two islands, between which she discovered a *Passage*, and has given the following instructions for sailing through it.

"If your business," says the discoverer, "is within the island, and you should be driven to leeward of the north end of the large island (on the west coast), I would advise that passage. Keep the highest land on the large island to bear E. N. E. but not more North, till in 17 or 18 fathoms, white clay, which soundings you will have within the small islands, if you keep mid-channel between them and the large island. When you have run the length of the third island, and brought it to bear about West, you will see to the eastward the north point of THE STRAITS, to be sure of which send your boat till you make Two tree point; this point may be easily known by two very tall trees, standing on the extreme of it among the rocks, and about half a cable's length from the rest of the trees. The passage is clean and good till you are passed Two tree point; then you must keep your boat a-head, and a good look out from mast-head, as there are many rocks lying between the point and Coconut island as well as Long island. As you steer from Coconut island over for the breakers off Long island, you will have great overfalls and very foul ground; but when you bring these breakers N. W. and S. W. you will find 45 fathoms, and half a cable's-length

* According to the *Jenny* the islands of Great Fortune lie from 1° to 2° south latitude; and according to the *Cuddalore* Fortune island lies from 1° 50' to 2° 25' South.

more

more to the eastward, you will have no ground. You may then steer your course to where bound."

According to Captain *Whitway* the north coast of Good Fortune island extends 5 leagues from W. N. W. to E. S. E. and nearly toward the west end, about 4 leagues W. N. W. from Cape Tilleroo, the north-easternmost end, lies HURLOCK'S BAY, which may be known by three small isles off that part of the island; the ground is good and soft in the bay, but as the outer bay is open to the N. E. winds, the inner bay must be preferred, though the channel is narrow and the larboard side rocky; this channel is safe, with a fine red sandy beach on the starboard side, all round the point.

From Cape Tilleroo, according to the same officer, the east side of Good Fortune extends about 10 leagues S. S. E. to Cape Marlborough, the southernmost end of the island. In this space there are two remarkable bays, Se-ooban bay, 10 miles to the southward of Cape Tilleroo, and Se-labba bay, 7 miles farther to the South.

SE-OOBAN BAY may be known by a large tuft of trees on the starboard side going in; your course in is S. W. and you may anchor where you please to shelter you from what wind may have forced you in, or to be ready to sail out with the wind you wish for: but the best is the south part of the bay, the larboard point going in, bearing N. E. it is best when you enter you should keep mid-channel to avoid the rocks off the point, and when at anchor sound about the ship to try if your birth is clear, as in some places there are spots of brittle coral rock.

SE-LABBA BAY is known by a high peak on the south side, called the *Turk's Cap*: when entered, keep the south shore well on board; but first give the south point a good birth, on account of the rocks running out. The ground is muddy in the bay, except the middle ground, which is brittle coral rock, visible at low water.

The island of Good Fortune contains between 7 and 800 inhabitants. Twelve miles from Good Fortune island lies Cape Cuddalore, which is the northernmost end of NORTH POGGY island, called by the Dutch *Bergland*; this island is about 20 miles long, and from 10 to 13 broad, and separated from SOUTH POGGY, or NASSAU ISLAND, by the Strait of Se-cockup. Nassau, whose name is also given to both islands, is longer than North Pogy, but has only half its breadth.

The STRAIT of SE-COCKUP is about a mile broad, and its direction semicircular; in most parts there is a strong current which sets sometimes 2 or 3 knots; to avoid which, if you should have occasion to anchor, you must make use of the several coves or bays that are found within it; there you will find all soft ground, without being in danger of hurting your cables, or losing your anchors. The entrance on the north-east side is very narrow and rocky, and the little island called *Poolo Tonga* lies in the middle of it; but on the south-west side it is clear, and about $\frac{1}{2}$ of a mile wide between two islands called *Poolo Seraffo*, adjacent to North Pogy, and *Poolo Supaw*, near South Pogy. In this strait are two places where you can get fresh water.

Between

Between Seraffo and the main there is a passage about 20 or 30 feet broad, and the depth of water from 5 to 10 feet. "In this strait," observes Mr. *Forrest*, who was there in 1757, "the water, being as smooth as glass and perfectly transparent, affords a most delightful entertainment, for the bottom is covered with an abundance of curious coral of many colours, white, brown, blue, and yellow, and of great variety of shapes, with numbers of fish frisking amidst those vary-coloured branches."

Opposite to the opening of the passage to the sea, lies a small island on which is a rock appearing like a thatched-house when seen from the S. W. and on which the sea is breaking with great force; thence the coast extends about 10 miles to the West; and the southerly swell breaks upon it with uncommon violence, raising a surf perhaps no where to be equalled.

On the west coast are several small islands, among which you may anchor abreast of the village of Se-laubo-laubo.

According to the report made by the Rajah of this island to Mr. *Forrest*, this island contains about 800 inhabitants, and North Pogy has pretty near the same number.

To the south-eastward of the Nassau islands lies the island ENOANO, or *Deceit Island*, in $5^{\circ} 35'$ south latitude, and 102° longitude East from London; it is distant from the coast of Sumatra about 20 leagues; is pretty large, and of a triangular shape; the inland country high. To the eastward of it near the southernmost point are four small islands which form an exceeding fine bay, where you have clear ground, good anchorage, and shelter from any wind for ships of any burthen. One of these islands is sandy, or at least of a sandy soil, and there vessels may go in, and careen or repair with great facility, having 4 fathoms close to the shore, fine clear ground. There are three good channels to enter and come out safely and easily with any wind that blows; there is also fine running water, plenty of fine wood for building or repairing ships, and abundance of fine fish, yams, and cocoa-nuts.

This island is well inhabited; the people are of the same colour with the Malays, but of a stouter make, more active, and go quite naked: their arms are only wooden lances, with which they also strike fish.

THE STRAITS OF SUNDA.

INSTRUCTIONS FOR SAILING THROUGH THE STRAITS OF SUNDA.

By Monsieur D'APRÈS.

WITH SEVERAL ADDITIONS, &c.

THE FIRST POINT of the Straits (or *Tanjong Alang-ajang*) on the Java side, lies N. N. W. 3 leagues from JAVA HEAD (see page 65); its extremity is remarkable by a rock with a tree upon it which navigators call THE FRIAR, and whose name is also given to the point. The coast between this and Java Head, forms a bight, all along which are several high rocks, resembling at a distance boats under sail. To the northward you descry the land of *Poelo Pamaitang*, or PRINCE'S ISLAND, whose south-east part makes the north coast of a little strait, by some called PRINCE'S STRAITS; the Dutch call it *Behouden*, or the *Safe Passage*;" by this you enter the straits of Sunda. At the south point of this island, and 2 leagues N. W. by N. of the Friar, are several great rocks named the *Carpenters*, extending W. S. W. about $\frac{1}{4}$ league; they are almost close to each other, and steep to; two ships length from them you have no ground at 40 fathoms, and 50 or 60 close to them. All the coast of Prince's island is equally bold.

"To anchor off Prince's island, you bring the high hummock S. W. by W. and the north-west part of the island N. N. W. in 38 fathoms, sandy ground. For watering, the same hummock is brought N. W. by N. then you will open a small sandy bay by a large old tree, near to which is a stream of fresh water; the higher up, the better it is."

One league East of the First point, in a bay on the Coast of Java, you find the little island *Cantaye*, called by the English MEW ISLAND, where ships often put in for wood and water. In anchoring at this place be cautious of a ledge of sunken rocks, which bear about N. by W. one mile from the watering place. Some Charts lay down a bank projecting to the westward, from the north point of this island, but an experienced navigator, *M. le Chevalier de la Boissiere*, affirms that $\frac{1}{4}$ a quarter of a league from this point he found $6\frac{1}{2}$ fathoms; therefore you need not be too fearful of turning it in this part.

Between Mew island and the First point, there lies a great rock or islot.

As

As the winds during the Monsoon of April and November generally blow from S. S. E. to E. S. E. to enter this Strait you must keep the Coast of Java on board, and go as near the Friar as possible; this rock is safe, and there appears no danger within a cable's length of it. When you are near it, and it bears N. N. E. you may perceive beyond it, in the same direction, a very high hill, like a sugar-loaf, upon the island Cracatoa; then the east point of Prince's island, whereon there is another peak, bears a little more northerly.

Those who intend to put in at Mew island, as soon as they have passed the Friar, stand to windward to round the north part of this island, at whose extremity is a great steep rock, but no danger about it, it being separated only by a little channel. To facilitate your boats in wooding and watering, you may anchor between this little island and the Coast of Java, in 18 fathoms, sandy ground; its point bearing between the N. W. and West, at the distance of $\frac{1}{4}$ a league.

Mew Island is not inhabited: the huts or villages are on Java, and a good way from shore. The refreshments to be had at this place are turtles, fowls, and cocoa-nuts, which the inhabitants of Prince's island bring in their proas on board the ships; these commodities are generally scarce and sold at an immoderate price. Upon Mew island is a stone with the arms of the States General cut thereon, and an inscription setting forth that they have taken possession of it. You get wood on this island, and water opposite to it, upon Java; it falls in cascades down the hill by the sea side, and is the only water you can easily get hereabout.

Captain *Carteret* anchored at Mew Island in 1768, and we cannot forbear transcribing the account he has given of this place*.

"September 20th we anchored on the south-east side of Prince's island; and the next morning, I sent out the boat for wood and water: however we could not get a sufficient quantity to complete our stock, for there had not yet been rain enough to supply the springs, the wet Monsoon having but just set in. At this time we had the wind so fresh from the S. E. which made this part of the island a lee-shore, that I could not get under sail till the 25th, when, it being more moderate, we weighed, and worked over to the Java shore.

"In the evening we anchored in a bay called by some Mew † Bay, and by others *Canty Bay*, which is formed by an island of the same name. We had 14 fathoms water, with a fine sandy bottom. The peak of Prince's island bore N. 13° W. the westernmost point of Mew island S. 82° W. and the easternmost point of Java that was

* Account of the voyages for making discoveries in the southern hemisphere, &c. drawn up by Dr. *Hutchinsworth*. Vol. I. p. 660.

† In the original it is called, by mistake, *New Bay*.

in sight, N. E. Our distance from the Java shore was about $1\frac{1}{2}$ mile, and from the watering place $1\frac{1}{2}$ mile.

"Mew Bay is the best place for wooding and watering of any in these parts: the water is extremely clear, and so good that I made my people stave all that we had taken at Batavia and Prince's island, and supply it from this place. It is procured from a fine strong run on the Java shore, which falls down from the land into the sea, and by means of a hoase it may be laded into the boats, and the casks filled without putting them on shore, which renders the work very easy and expeditious. There is a little reef of rocks within which the boats go, and lie in as smooth water, and as effectually sheltered from any swell, as if they were in a mill-pond; nor does the reef run out so far as to be dangerous to shipping, though the contrary is asserted in *Herbert's Directory*; and if a ship, when lying there, should be driven upon the shore, she may with the greatest ease run up the passage between Mew island and Java, where there is sufficient depth of water for the largest vessel, and a harbour in which, being land-locked, she will find perfect security. Wood may be had any where either upon Java or Mew island, neither of which, in this part, are inhabited."

It is necessary, in this season, to prefer the LITTLE CHANNEL between the Coast of Java and Prince's Island, or *Bebouden Passage*, to the GREAT CHANNEL northward of this island; for in making use of the latter it would be exceedingly difficult, on account of the winds which are then blowing, to gain the Coast of Java: you should keep this coast on board, not only to avail yourself of the winds, but also to get anchoring ground in case of a calm, and a contrary current, which advantage cannot be expected on the Sumatra coast.

If some ships, after falling to leeward of the Straits of Sunda, have been lucky enough to re-enter through the Great Channel, they have lost much time in beating against winds and currents, and this is enough to prevent your making choice of that channel.

When you sail from Mew island, keep along shore as far as *Welcome* or the SECOND POINT (*Tanjong Gookoolang*), which may be rounded at $\frac{3}{4}$ of a league distance, and even nearer upon occasion. Within the point you will descry WELCOME BAY, with several islets at the bottom; it extends as far as Pepper bay, or more properly *Pepper Point*, the THIRD POINT in the straits (*Tanjong Luffong*), which lies 6 leagues N. E. by E. $\frac{1}{2}$ E. from the Second point. To the E. N. E. of this Second point there is a bank upon which an English ship ran aground, and those who are obliged to turn it in this part must proceed with great caution: it has but 9 feet water, in some places stretching to the E. N. E. and W. S. W. two cables length, and one in breadth. When on this bank the northernmost peak on Prince's island is in one with the Second point, bearing W. N. W. about 5 miles, and Pepper, or the Third point, N. E. $\frac{1}{2}$ E. about a cable's length N. N. W. from it, you have 19 fathoms.

When

When you are to the northward of Welcome, or the Second Point, steer N. E. for the FOURTH POINT, which lies about 14 leagues therefrom on this point of the compass. Having sailed about 9 leagues you may perceive to the N. E. by N. *Poelo Somgiang*, an island of a moderate height and very uneven, which navigators have called THWART-THE-WAY, or MIDDLE ISLAND, because it is nearly so between the Coasts of Java and Sumatra, which in this part, the narrowest of the straits, are distant only 6 or 7 leagues. This island is about 4 miles long N. E. by N. and S. W. by S. and has a reef which projects a little at its south point.

Mew Island being unable to supply ships that stand in need of proper refreshments, or whose condition wants repairing, those who are so circumstanced will do well to anchor at SERIGUY, to the north-eastward of Pepper Bay, at the foot of some high mountains which are on that side.

To gain this place, having passed the Second point of the Straits, shape a course toward the Third point, which is more extensive than the other, forming several little bays and containing about 3 leagues in circuit. Within Pepper Bay lies an islet, to the north-westward of which are breakers that render its approach dangerous, as is the whole bay.

When you are off Pepper or the Third point, about a league distant, you see the little island Seriguy * bearing E. by N. which, from this situation is confounded with the Coast of Java near it. Seriguy may be known by several great trees upon it, in some places thick, in some others scattered and less confused. In sailing toward this island, you must take care to keep it always on the starboard side, and to anchor about $\frac{1}{2}$ of a league N. N. W. thereof: you will then be about the same distance from the village of Seriguy, on the Coast of Java, under the declivity of the second hill in Pepper Bay: there are many inhabitants, and a market every day. The governor, who resides there, is dependent on the king of Bantam, and all the neighbouring country belongs to that prince, the Dutch keep only the trade in their hands; the people are very civil, but selfish and cunning; they will buy every kind of goods provided you sell them excessively cheap, and take in exchange their commodities at an extravagant price. You may set up tents, and send your sick ashore upon the island. There is a reef stretching about a mile to the northward, and going thence as far as the coast.

It is about $4\frac{1}{2}$ leagues N. by E. from Seriguy to the FOURTH POINT (*Tanjong Ciccorang*), and the land along shore is full of cocoa-nut trees, which are the staple of this country. In some places, especially beyond the village of Negery, there are several breakers, the farthest of which reaches $\frac{1}{2}$ of a league from the shore. Having weighed from Seriguy, keep about a league off shore; notwithstanding the irregular soundings, which increase farther off, there is good anchoring ground in 20, or at most 30 fathoms;

* Or Seringen, called by the natives *Poelo Papale*; the anchorage is in 6 fathoms.

therefore:

therefore keep within that depth, in case it should fall calm, or you have not wind enough to stem the current, which generally runs to the south-eastward in this season.

"When you are off the Fourth point, and before you come the length of it, observe that in going up the channel of Bantam, two other points being almost in one from N. E. by E. to N. $\frac{1}{2}$ E. the Button N. N. E. $\frac{1}{2}$ E. Thwart-the-way N. $\frac{1}{2}$ E. Cracatoa West; at which time a bluff tree on Java shore bears S. E. by E. distance 3 miles; in 10 or 12 fathoms, there is a ledge of rocks in shore, and from these rocks a sand runs off $\frac{1}{2}$ mile, where the *Catbarine* was lost."

The Fourth point has nothing remarkable, except that beyond it the coast runs about $1\frac{1}{2}$ league to the eastward as far as *Anger* or ANJERE. The principal village, to which this name has been given, is situated near the sea shore about 2 miles on this side of the point, and will supply you with buffaloes, hogs, fowls and ducks, if you are short of provisions. You will be opposite this place when Middle island is in one with the high land of Sumatra about Hog point; but observe that there is no holding ground between the two points above mentioned, and that a strong current is sufficient to drive you.

"The following remarks on Anjere road were made by the ship *Raymond*, Captain *Henry Smedley*, in 1785; she laid in 9 fathoms, Anjere point flag-staff bearing S. by E. $\frac{1}{2}$ of a mile from the anchoring ground. The watering place lies above $\frac{1}{4}$ of a mile W. by S. from the flag-staff; the water is got with much trouble, the mouth of the river being full of rocks, and the landing dangerous."

N. N. E. $1\frac{1}{2}$ league from Anjere Point, and at the same distance E. S. E. of the south part of Middle island, lies a little round islet covered with trees, called, the CAP *, and N. $\frac{1}{2}$ W. 7 miles from it lies another like it, but larger and higher, which is named the † BUTTON.

As from Anjere point, till you are past these two islets, there is no good anchoring but in very deep water, it will not be prudent to leave the coast of Java to go between them, but with a fresh breeze well set in, and not, as several ships have done, at the first appearance of wind, which seldom lasts long enough to gain the anchorage to the northward of St. Nicholas or Bantam point, or about North island. Without this precaution, should it prove calm, you are driven to and fro by the currents, which hereabout are exceedingly rapid, the narrowness of the channel through which they run adding to their velocity.

"There is no good anchoring ground," observes Captain *Smedley*, "from Anjere Point till you bring St. Nicholas point to bear S. by E. or South; then you may anchor in 17, 15, or 14 fathoms, clay ground.—Between the Cap and the Button, there are from 40 to

* By the French *le Bonnet*, or *la Petite Toque*.

† The French call this *la Grande Toque*.

45 fathoms, bad anchoring ground. A current sets from 3 to $3\frac{1}{2}$ miles *per* hour, upon the springs to the West and S. W. in the S. E. Monsoon, and from East to N. N. E. in the N. W. Monsoon."

"To the north-eastward of the Cap, a bank extends along the Coast of Java, which they call BROUWER'S SAND; it is very dangerous, as it shoals suddenly. The *Harrison's* long boat was on it in $1\frac{1}{2}$ fathom, with 4 or 5 fathoms within a cast all round the sand; the Cap then bore S. W. $\frac{1}{4}$ S. Thwart-the-way, or Middle island W. by N. the Button N. W. $\frac{1}{4}$ N. the point of an island near the shore, which shut in Bantam point, N. by E. and a very little island close in shore E. N. E.

"When you are near the Brouwers Sand you will shut the Cap with Anjere point; and then you may be sure you are not above a mile from the edge of the bank."

Whether you sail from Anjere point, or any place on this side of it, you must always leave the Cap to the starboard, and sail between it and the south point of Middle island; then you pass the Button on the east side, at what distance you think proper. About a mile off the south-west part of the Button there is a rock 14 feet under water upon which an English ship damaged her keel. Navigators were a long time ignorant of this danger, several having sailed on all sides of this island, without perceiving it; whence it is supposed to be not very extensive. There is also an account of one danger with 17 feet water on it, bearing from the Button N. W. by W. 2 miles.

ST. NICHOLAS POINT, called also BANTAM POINT, bears E. $\frac{1}{4}$ N. 3 leagues from the Button. It seems unnecessary to come to this point, unless upon the appearance of an approaching calm, to secure convenient anchorage.

DIRECTIONS FOR SAILING FROM THE STRAITS OF SUNDA TO THE STRAITS OF BANCA.

By Mons. D'APRÈS, &c.

AFTER passing the Button, steer N. N. E. to get sight of the Two BROTHERS (called also the *Two Sisters*), 17 leagues from it, on this point of the compass, and in latitude $5^{\circ} 13'$ South. These are two small islands near each other and of an equal size and height; they may be seen 6 or 7 leagues, rather by the height of the trees planted thereon than by that of the land; when they bear N. by E. and S. by W. they are in one, they are not above 6 or 7 leagues distant from the coast of Sumatra.

From each end of the Two Brothers runs a reef which extends half a quarter of a league North and South; and though the same reef encompasses also the east and west coasts,

coasts, you may approach them, especially the latter, within $\frac{1}{4}$ of a mile, to the westward of them, without any danger, and have 10 or 11 fathoms. It is improper to keep at too great a distance from them, in order to avoid two shoals, the principal of which called the SHAHBUNDER, from the name of a Dutch ship that narrowly escaped being wrecked here, lies 7 miles W. by N. $\frac{1}{4}$ N. of the southernmost island: the ship *Jupiter*, commanded by M. *Dessaudrais du Fresne*, struck upon it returning from China, and had 17 feet of her keel knocked off, which obliged her to go to Batavia to careen. This shoal seems to be scattered in different parts, and to extend farther than is generally imagined.

"The *Sandwich* was aground on this shoal in 1749, and the following account is taken from her journal.

"January 27, got through the Straits of Banca. On the 28th in the morning saw the Two Brothers; steered in for the Sumatra shore, and at a $\frac{1}{4}$ past 3 P. M. ran aground on a sand, when we had the following bearings, *viz.* The northernmost part of Sumatra in sight N. by W. the southernmost part S. W. by W. $\frac{1}{2}$ W. the southernmost of the Two Brothers S. E. by E. $\frac{1}{2}$ E. the northernmost E. N. E. easterly, distance 3 leagues, and from the Sumatra shore 4 leagues.

"About 2 A. M. by the water rising a little, got into 18 feet water, but soon after were aground again; we got off a second time, and were soon aground a third. By sounding round the ship, we found the shoalest water 19 feet, except where she lay, which was only 17 feet; and a little way a head, had 4 or 5 fathoms. Set sails, started our water, and threw some lumber over board, so that with a fresh breeze, and a small swell, we drove her fairly over by 10 o'clock. The ship thumped excessive hard, but made no water. Anchored in $4\frac{1}{2}$ fathoms, having been 19 hours from the first grounding to getting clear the third time.

"The 30th, after sending the boats to sound, and finding no less than 4 fathoms, got again under sail, and stood on for about 5 miles, when the ship struck again, but did not stick; on which we anchored in $4\frac{1}{2}$ fathoms. The boats were sent out again to the southward, and to their great joy found the water deepened gradually to 9 fathoms, which they had about 5 miles from the ship.

"The 31st in the morning we made sail again, and in a few hours were in deep water."

Two leagues and a half E. by N. of the northernmost of the Two Brothers are two little sand banks called BROUWERS SHOALS, upon which several persons, who have been near them, affirm they have seen rocks; but as others say nothing of these rocks, it is presumed the whole is covered at high water. The shoals lie exactly N. W. 4° W. from North Watcher island.

The commander of the *Prince Edward* speaks thus of the Passage from the Straits to the Two Brothers.

"From

" From Thwart-the-Way, or Middle Island, NORTH ISLAND, on the Coast of Sumatra, bears North 6 leagues, and from this the Two Brothers bear N. E. $\frac{1}{2}$ E. about 14 leagues. You are not to borrow on the Sumatra shore under 10 fathoms, and must bring the westernmost of the Two Brothers to bear N. E. by E. at about 8 miles distance: steer but a little wide of it, till it is brought to bear South of you, at $\frac{1}{2}$ mile distance; then to the N. E. by E. till having deepened your water to 13 or 14 fathoms, you shape a course for Lusepara, and you will have from 10 to 12 fathoms all the way.

" A Danish ship in company with us kept to the eastward of the Two Brothers, within $1\frac{1}{2}$ mile distance; we chose the other way, which is safe, coming no nearer than $1\frac{1}{2}$ mile, in depth 12 or 13 fathoms; the wind being scant, and but little of it, we were carried within $\frac{1}{2}$ of a mile of the southernmost of the Brothers; sent the yawl to sound, she had 11, $11\frac{1}{2}$ fathoms within $\frac{1}{2}$ a mile of the shore. We came to the eastward of these islands, in our way from China, and no danger but what may be easily avoided; the reef which runs out from the southernmost of them being above water.

" *Note.* S. S. E. about 2 leagues from the south end of the Two Brothers, lies A SHOAL even with the water's edge, on which the *Dolphin* was ashore."

All the Coast of Sumatra, from the Straits of Sunda to the length of the Two Brothers, is high land; and beyond them, as far as the Straits of Banca, it is low and woody. Along this shore are the mouths of several rivers, the most considerable of which is called Tollong-bouang: there lies before it a great bank, the edge of which is near 3 leagues off; and to the northward of it you meet with another, projecting still farther in some places, and on which are several dry patches. This last is known by a point, which they say is an island, whereon are trees higher than in any other place hereabout; for this reason it is called GREAT-TREES ISLAND. Thence to the entrance of the Straits of Banca the coast forms a bight, and extends N. by E. 13 or 14 leagues.

Although by the bearings of this coast you may conclude the island LUCEPARA bears N. by E. 34 leagues from the Two Brothers; yet the irregularity of the currents which run into or out of the Straits of Banca, together with the ebbing and flowing of the rivers along the Coast of Sumatra, prevent your shaping a direct course from one to the other. The best method is to steer by soundings as follows.

As soon as you have sight of the Two Brothers, shape your course so as to go about $\frac{1}{2}$ of a league to the westward of them in 12 or 13 fathoms, thence steer N. N. E. in order to keep in 13, 12, and 10; if it increases to 15 or 16 fathoms, it is a proof that you are too far off the Coast of Sumatra to the eastward; in this case you must borrow more from the North, and even from the West to regain the Sumatra coast.

On the contrary, if by means of the tides you are driven too near the island of Sumatra, the depth will decrease to 12, 10 and 8 fathoms; as soon as you have this latter depth, stand to the eastward, if the wind permits, or anchor, in order to avoid the

banks bordering the Sumatra shore; the most dangerous, and that which projects farthest, is off Great-trees island before mentioned; it is called *Turtle Bank*. In the day-time and clear weather, you may know your distance from this island, as well by sight thereof as by your soundings; but in the night-time, or hazy weather, it is necessary to keep the lead going.

When you are past Great-trees island, as you approach Lucepara, the depth decreases regularly to $7\frac{1}{2}$ fathoms; then you may see it in latitude $3^{\circ} 13'$ South. It is small, and the land is low, but by means of its great trees it can be easily seen at 6 leagues distance. You stand toward this island till it bears North, about $2\frac{1}{2}$ leagues; and then anchor, if the tide or night will not permit you to go within the straits.

From the south point of the island of Banca which lies in $3^{\circ} 9'$ latitude South, a shoal extends 5 leagues S. S. W. if for want of following the above direction, namely bringing Lucepara to bear North $2\frac{1}{2}$ leagues, or by any unforeseen accident you should be forced on that side; so soon as you perceive it, whether by seeing the land to the northward, or by the decrease of the soundings, you must steer W. N. W. till you get sight of Lucepara. These marks are unnecessary when you are to the eastward of it, and consequently South of Banca; it is sufficient, in order to be certain of it, that you cannot see the land to the westward.

REMARKS ON THE SUMATRA OR ZUTPHEN CHANNEL IN THE STRAITS OF SUNDA.

THE Danes pass between Thwart-the-way and the Stroom Rock, and also between the Stroom Rock and Sumatra, which is a much narrower passage than between Thwart-the-way and Java. This rock lies about $1\frac{1}{2}$ mile N. W. of Thwart-the-way. "I should make no difficulty," says the captain of the *Richmond*, "to use either with a leading wind, keeping the Sumatra shore in the one, and borrowing pretty near Thwart-the-way in the other. I think either of them, with a settled gale, is to be preferred to the passage between Java and Thwart-the-way, where in case of being suddenly becalmed, as we were, you are obliged to let go an anchor in very deep water; whereas in the other channels, in less than half an hour, you are clear of all danger.

"Between the Zutphen islands, and the Stroom Rock, within $\frac{1}{4}$ of a mile of the islands, is the best passage; the *Richmond* kept within two cables length of the islands, and falling calm she was obliged to anchor in 48 fathoms, soft ground; then weighed, and kept the said islands close on board, till she was clear of the Stroom Rock."

The

The ZUTPHEN or HOUNDS ISLANDS, also called, *Hog Islands*, lie to the eastward of *Hog Point* the southernmost head-land of Sumatra; captain *Charles Richardson* of the *Pigot*, who was here in 1770, gives the following account of them, and of the adjacent coast.

" January 17th, at 1 A. M. weighed from North Island, keeping along shore from 20 to 35 fathoms, with the wind at West. At 1 P. M. came to with the best bower in 20 fathoms, mud and sand; Bantam point bearing E. by S. $\frac{1}{2}$ S. westernmost extreme of Thwart-the-way S. by E. $\frac{1}{2}$ E. The Fourth point of Java S. $\frac{1}{2}$ E. Hog island S. W. and North island N. by E. $\frac{1}{2}$ E.

" Went on shore on several of the Hog islands, heard hogs grunting in the thickets, but saw none of them; shot several pigeons: went on shore likewise upon the main of Sumatra, where we found a very fine river; we had regular soundings all the way inshore; the river bore from N. N. W. from the ship. We launched the boat over the bar, and took her up the river about $1\frac{1}{2}$ mile, where we found a very fine populous village, about which were very fine rice fields, with plenty of cattle and fowls; we got one bullock, some fowls, and plenty of cocoa-nuts; and I have reason to think, could we have stayed, we could have purchased abundance of provisions with dollars. The people seemed to be entirely unacquainted with Europeans, but were well dressed and respectable, each man having his *criss* and turban; it is necessary to be upon your guard when amongst them; this village is called *Tangrea*."

DIRECTIONS FOR SAILING THROUGH THE STRAITS OF SUNDA, TO BANTAM AND BATAVIA, AND THENCE TO THE STRAITS OF BANCA.

By M. D'APRÈS, and Captain GEORGE HAYTER.

IN coming from the westward you must endeavour to make *Engano* island; then with the westerly winds you sail towards the south point of Sumatra, from whence this island is between 43 and 44 leagues distant: this extremity terminates in a low flat point, covered with trees, very near which lies the island of Little Fortune, already described: on Sumatra you may see several high mountains.

Afterward you steer so as to go to the southward of *Cracatoa* island, and from thence you pass between Thwart-the-way island and the Cap.

If there is any danger * in the channel between Cracatoa and Poolo Bessie it is at least apparent; and as the winds and currents are favourable in this Monsoon, it will be convenient to pass these islands as well as between Thwart-the-way and Zutphen islands, especially as this course is straiter than that just mentioned.

When you are $1\frac{1}{2}$ league to the northward of BANTAM POINT, if you would go to Bantam, you must approach POOLO PANJANG, a long and flat island, which you may pass on either side; only observe its south point is dangerous: the west channel has 6 or 7 fathoms water, and the east channel, which is wider, 8 or 9. Having passed this island, you see upon Java a round hill, which, when it bears S. S. W. the town of Bantam is in one with it: you must keep on till opposite Golgotha hill, off which is the road, where you anchor in 5 or 6 fathoms, mud.

If you go to BATAVIA, when you are a league to the northward of Bantam point, you must steer E. by S. to go between the Coast of Java and *Poolo Babee* and *Poolo Tidong*, both lying on the north side (*Poolo Tidong* is also called *Wappen* island and *Cezaar* island). This course you must continue, till within sight of the GREAT COMBUYS, bearing thus 15 or 16 leagues from Bantam Point, you may come within a mile of the north side of it, and still nearer to the LITTLE COMBUYS, ($\frac{1}{2}$ of a league E. by S. of the great one) whereby you will avoid several shoals which lie to the northward.

Two leagues S. E. by E. of the Little Combuys, is the island MIDDELBURG, near which is that of AMSTERDAM, which you pass also to the northward; the depth in this track is 13 or 14 fathoms. Having passed these two, to enter the ROAD OF BATAVIA, through the Great Passage, stand to the eastward, to come, within $\frac{1}{2}$ of a league, to the Island EDAM, from whence you stand to the northward, leaving HOORN ISLAND to the starboard, and that of ENCHUYSEN to larboard. This track will lead you opposite Batavia, where you may anchor in what depth you think proper. The road is always full of ships, of all the Indian nations who come hither to trade. This city is the chief of the Dutch settlements in the Indies, and here the General, as well as the Supreme Council reside; it lies in latitude $6^{\circ} 10'$ South, and $106^{\circ} 56' 45''$ longitude East of London.

"The course from Bantam Point to the Great Combuys," says captain Hayter, "is East, having strict regard to your lead, and to any island you can get sight of. The first on your starboard is *Poolo Panjang*; then the two Madys; and on your larboard side are *Poolo Babee*, then *Wappen Island* or *Poolo Tidong*, which, when you get sight of,

* The *Ceres*, homeward bound, in 1777, and the *Bridgewater*, Captain Parker, likewise homeward bound; in March 1787, went through this channel; they found it very safe, and had good soundings from 25, 22, 19, to 30, 33, 29, 21, and 18 fathoms, mud, at the entrance and in the middle, between *Poolo Bessie* and *Poolo Racata* to the north of Cracatoa; they found hard ground between Verlatens Island to the westward of Cracatoa, and the Sea-Rock to the westward of *Poolo Bessie*.

you go nigh; you also see *Men-eaters Island* on your starboard bow. The next island in course is the *Great Combuys* E. $\frac{1}{2}$ S. there is a shoal to be avoided, which is called the *LYALL SHOAL*, from the ship *Lyall*, who struck upon it in 1734; it is just in the fair way, about the bigness of a ship, and like a sugar-loaf, 16 feet water upon it, and close along side of it 5 fathoms. The bearings when on it are the Beacon N. by W. $\frac{1}{2}$ W. the west end of *Poolo Tidong* or *Wappen* island N. $\frac{1}{2}$ E. and the east end N. N. E. $\frac{1}{2}$ E. *Great Combuys* E. S. E. southerly, and the body of *Men-eaters* island S. E. $\frac{1}{2}$ E. distant from the beacon about $9\frac{1}{2}$ miles.

"In sailing along, keep at least $\frac{1}{2}$ mile birth from the *Great Combuys*, taking it on your starboard side; the east end has a beacon on a small sandy point, which you may near as much as you judge proper, without danger.

"Keep to the southward until you bring the two *Combuys* into one; then haul up E. N. E. for a small island called *Duffens Isle* or *Poolo Dapour*, which you keep a very little on your starboard side, off your bow-sprit's end; and by the time that you are a mile, or a little more from *Little Combuys*, look without, and you will see two beacons, one on each side of you, about 1 mile $\frac{1}{2}$ asunder, which you go between: and keeping still towards *Duffens* island, until you have got a good birth off the southernmost beacon, then haul away S. E. by S. off the Islands *Haarlem* and *Hoorn*, which you may pass very safe at less than $\frac{1}{2}$ mile distance, keeping them on your larboard side. As you draw nearer, coming abreast of *Haarlem*, you will see a beacon off the east end of *Rotterdam*, which you must keep at a proper distance. When you come to have *Hoorn* island East of you, haul up to the eastward until you bring the dome of *Batavia* church S. by E. or South, to avoid a dangerous shoal on which there might be no beacon, but if it blows a fresh breeze, breakers are to be seen on it. This shoal bears of *Hoorn* S. by W. or $\frac{1}{2}$ W. distance about $2\frac{1}{2}$ miles; it bears of *Edam* S. W. of *Purmerent* West, or W. by N. scarce 2 miles, and when *Batavia* church bears S. by E. $\frac{1}{2}$ E. the shoal and the church are in one.

"If the dome of the church be kept a little to the southward of S. by E. you cannot touch this shoal; but your safer leading mark is to bring the dome S. $\frac{1}{2}$ E. to South, then you may steer directly in for the Road, that you will see 2 miles before you come to the anchoring place, in which there is 5 or 6 fathoms, safe ground."

If from *Batavia* you are bound to the Straits of *Banca* you must steer N. N. W. for the *South*, or *Zuyder Watcher*, (*WATCHER* by the English) 10 or 11 leagues from *Batavia* Road: you may pass it either to the East or West $\frac{1}{2}$ of a league. If you go to the eastward, you must approach it before it bears N. W. in order to avoid a little bank, called by the Dutch *Nasomver Drooght*, or sand, about 2 leagues to the south eastward. When the *South Watcher* bears S. E. if you do not choose to sail along the *Thousand Islands*, you may stand to the northward, and N. by E. to go wide of them, and pass between the bank, or sandy island, called *Brouwers Drooght*, and that

of

of *Prince's Drooght*; the first lies about 7 leagues north-easterly of the South Watcher, in $5^{\circ} 12'$ north latitude; the other 8 leagues N. W. by W. $\frac{1}{2}$ N. of Brouwers Drooght, in $5^{\circ} 4'$. Being in the latitude of 5° , steer a N. N. W. course as far as 4° to get into 12 fathoms to the eastward of the bank off Great-trees island, on the eastern coast of Sumatra. Care must be taken to sound from time to time, to prevent falling to the westward of your reckoning; on the contrary, if the soundings shew, by a great depth, that you are to the eastward of it, you must steer more westerly than the course prescribed, in order to gain the 12 fathoms, after which you may enter the Straits.

"The BROUWER'S SAND," says Mr. *George Robertson*, "has two dry spots upon it; it lies in the direction of N. by E. $\frac{1}{2}$ E. and S. by W. $\frac{1}{2}$ W. $2\frac{1}{2}$ or 3 miles in length, and not more than $\frac{1}{2}$ mile in width. We ran along the eastern edge of it, at the distance of $1\frac{1}{2}$ or 2 miles, regular soundings, 15 fathoms. The bearings are thus, viz. north end of Brouwers shoal in one with the North Brother S. 64° W. body of ditto in one with the South Brother S. 65° W. south extreme of ditto in one with the South Brother S. 63° W. North Watcher at the same time bearing S. 47° E. distance from the shoal, 3 miles, 15 fathoms."

INSTRUCTIONS FOR SAILING THROUGH THE STRAITS OF BANCA.

From M. D'APRÈS, &c.

THE STRAITS OF BANCA extend about 35 leagues from S. E. to N. W. The Island Banca, whence it derives its name, bounds it on the east, and part of the Coast of Sumatra on the west side. This coast is very marshy, and has no other elevation but the trees, the lower part of which, near the shore, is washed by the sea. You must not approach it too near on account of a mud bank that borders it, extending $\frac{1}{2}$ a league out, and even more in some places.

The island of Banca is higher; on it are several mountains, the most conspicuous of which are those of Parmiffang, and Monopin hill.

The little island LUCEPARA before mentioned, lies at the S. E. part of these Straits, and forms two channels to enter it; the eastern one is very wide, and seems to make an exceeding fine passage, but is not frequented. It has been said that this is the best passage, the least depth being 8 fathoms; however it requires confirmation by experience, for all ships, to this day, prefer the western channel, between the Coast of Sumatra and Lucepara, which is about 3 leagues broad. Navigators should be particularly careful in this part, on account of its shoalness, and the most prudent generally send their boat a-head

a-head to sound; but without this precaution it will be easy to determine the track that is to be kept in this passage, with regard to Lucepara and the Coast of Sumatra.

Observe that the tides are very strong and irregular throughout the Straits of Banca: when the wind blows from the East, at the full and change of the Moon, the ebb sets to the northward, for 16 hours, while the flood lasts only 8 hours.

In common tides there are two floods and two ebbs in 28 hours, whose duration is in some sort regulated by the wind. The flood lasts 6 hours and the ebb 8 hours; or the flood lasts 5 hours and the ebb 9 hours; it is to be observed that the rapidity of the flood always depends on the force of the S. E. wind. The contrary happens in the Western Monsoon, and then the flood is stronger than the ebb; in this case the flood, in common tides, lasts 8 hours, the ebb 6 hours, and the velocity of the current is proportional to the strength of the wind blowing from the N. W. quarter. It is necessary you should attend to these different changes, and anchor when there is not wind enough to stem a contrary tide.

When you set out from the place where Lucepara bears North, distance about 7 or 8 miles, there you have convenient anchorage, and can wait for the return of day-light and a favourable tide. First steer W. N. W. till you bring Lucepara to bear N. N. E. then N. W. till it bears N. E. In this track you find $5\frac{1}{2}$ or 6 fathoms, soft mud. If your soundings are hard sand, which, in this passage always denotes being near the banks that encompass Lucepara, then you are to keep more to the westward, in order to get into mud soundings, which are those of the right channel.

Lucepara island bearing N. E. steer N. W. by N. till it bears E. N. E. then N. N. W. and, if necessary, N. by W. so as to give the coast of Sumatra a good birth, which you must then keep at a league, or $1\frac{1}{2}$ league distance. This will carry you clear of the dangerous bank which lies N. W. by N. of Lucepara, and S. E. of the First point, and whose breakers you may see at low water: this is the bank on which the *Cruttenden*, captain *Bowland*, was in 1765. It extends about N. W. and S. E. 2 leagues, with only 10 feet water upon it: another small shoal lies to the westward of the middle part of the *Cruttenden* Bank, and about South from the north-west part, which is the shoalest. There is also a third small bank, to the southward of these, on which captain *Charles Newton*, in the *Concord*, was aground. When Lucepara bore S. S. E. $\frac{1}{2}$ E. and the First point of Sumatra N. N. W. they had soundings as fast as they could heave the lead, from 10, 7, 4, 3 fathoms to 10 feet.

" To avoid these shoals with certainty, come no nearer than 3 or 4 miles from Lucepara, till you are abreast of it; then stand N. W. by N. till you are within 2 or $2\frac{1}{2}$ miles of the Sumatra shore, and keep that distance, or rather less, till you are past the FIRST POINT of the Straits (of which there are four on the Coast of Sumatra); at this distance you will have 5 fathoms, which is a good depth to preserve. Be sure not to be so far off the Sumatra shore as to deepen your water above 6 fathoms, nor nearer that shore than

than $\frac{1}{2}$ less than 4, and take care not to be deceived, in allowing too great or too small a distance, either from the Sumatra shore, or the island, but keep so as never to bring Lucepara to the southward of S. E. by S. till the First point bears N. W. by W. for the *Kent* was in $\frac{1}{2}$ less than 3 fathoms, when the island bore S. S. E. and the *Eyalefs* boat was on the edge of one of the rocks, when Lucepara bore S. S. E. $\frac{1}{2}$ E."

"You must come no nearer," says M. *D'Après*, "the Coast of Sumatra than one league, if you would not risk to run upon a bank which borders this coast, and whose edge runs out $\frac{1}{2}$ league or more in some places. Several ships, by ranging the coast too near, having met with this accident, have not been able to get off again without great difficulty."

As you near the First point the depth increases to 12 fathoms, mud; and beyond that it is greater.

When Lucepara bears East of you, if the weather is clear, you may easily perceive the mountains of Parmissang, on the isle of Banca, which lie N. by W. of the First point of the Straits.

According to the observation of several navigators, the depths in the passage between Lucepara and Sumatra vary at different times, at the same bearings off Lucepara, and at the same distance; and upon examining several journals, continues M. *D'Après*, notice has been taken of this inequality. Several ships found 4 fathoms in the same place (according to their estimation) where others had found 6 at another time; this may be occasioned by their being nearer to, or farther from, the time of high water; or by the freshes of rivers occasioned by frequent and heavy rains; or by the difference of judgment in the estimation of their distance from Lucepara. On the Coast of Sumatra, where it is very shoal, if instead of 2 leagues W. S. W. you are $3\frac{1}{2}$ leagues from it, it is not surprising to find less water; when this happens you must stand toward Lucepara for deeper water.

It is reckoned $9\frac{1}{2}$ leagues N. W. by N. from the First point of these straits to the Second. The coast between forms two false points, so called to distinguish them from the principal ones. This part is also bordered with a mud bank which projects a mile, so that the coast may be ranged at 2 miles without danger. The depths, though unequal, are generally about 15, 18 and 20 fathoms.

Upon the extremity of the Second Point is a tree which seems a little separate from it; so that at first sight you would take it for a ship at anchor. The coast beyond it forms a great bight; this seems to have escaped the notice of hydrographers, as well as the mud bank which fills up the whole extent. Several navigators have imagined, that off this extremity was a little bank, between which you might pass; but sounding myself from the Second point as far and farther than this pretended bank, this bight was very shoal, and most of the bank might be seen at low water. The course from the Second to the Third point was N. W. $\frac{1}{2}$ N.

We must however quote the navigators who contradict the assertion of M. *D'Après*.

"There

"There is no danger," says Captain *Hayter*, "on the Sumatra coast, till you are past the Second point, between which and the Third point, there is a shoal on a little spot; some say there is water enough upon it for any ship; but to avoid it, steer from it directly over for the high land of Quala-Banca, which will be about N. by W. and keep rather more than mid-channel over, not under 5 fathoms, till you have the body of the highest part of Quala-Banca, E. by S. of you, the said shoal lying about West therefrom.

"Then haul away for the Fourth point, for if you do not get hold again of the Sumatra shore, the outlet of the rivers may drive you over too far on the Banca shore, where there are dangerous reefs of rocks, 3 or 4 miles off the point, that run down from Monopin Hill; therefore, if in the night it should fall calm, it is the safest way to anchor."

"The ship *Lynn*, in 1733, fell in with a shoal bearing N. E. by E. about 2 cables length distance, at which time the Second point of Sumatra bore W. S. W. about 7 miles; then they had 7 fathoms; the cast before had no ground with the hand-lead. They took this shoal for the same as that mentioned above, though they were nearer the Banca than the Sumatra shore; and most ships may go to the westward of it, when they imagine they go to the eastward: in the day-time it is visible enough, and easily avoided, but it must be dangerous in the night.

"The master of a Dutch sloop gave an account, on board the *London* in these Straits in 1738, that he had been upon a rock, with 20 and 16 fathoms all round it, which lies to the eastward from the Second point, about mid-channel, but rather nearer Banca; likewise of a sand laid down in the Dutch draughts between the Third and Fourth points, near the Banca shore, which, he says, lies near the mid-channel."

Within the Second point, about $\frac{1}{4}$ league to westward there is a great tree, encompassed with several others of an equal height; but as this is taller than the rest, it looks like a tree left to grow in the middle of a clipped hedge; it serves as a mark to know the Second point, in coming from the northward, and to avoid the extremity of the bank which lies N. by W. $\frac{1}{4}$ W. of this tree.

From these remarks you see evidently, that it is not only dangerous to range the Coast of Sumatra between the First and Second points, but also to sail direct from one to the other.

The properest course, after passing the Second point, is to stand toward the largest of the Nanka islands, which then bears about N. by E.; at this bearing its two extremities appear low, and the middle somewhat higher. In this track you have 18 to 20 fathoms, which decrease to 15: as you near the islands, you are to keep in this depth.

If you are in want of fresh water or wood, you may be conveniently supplied therewith on the largest island. As there are, between these islands, some dangers near the water's edge, you must anchor without all, and not enter their channels without having first proved them.

There are two places where you may water on POOLO NANCA, which lie North and South from each other. When you are at the northern mouth the small Poolo Nanca bears W. S. W. and a small negro-house on Great Nanca E. S. E. $\frac{1}{2}$ a league distance: the water is better at this place, but it is rather difficult to come at, on account of the stones with which it is surrounded.

The south side of the same island is cleaner, and there are three small sandy coves where you can land; from the south-east point to the west point, the distance is about $\frac{1}{2}$ a league, but there is no fresh water on that side. On the west side, a reef is projecting about 2 cables length, with rocks above and under water, and not more than 2 or 3 feet upon them.

The north side has a little less than $\frac{1}{2}$ a league in extent, and the watering place lies about $\frac{1}{2}$ a mile from the west point: it is easily known by a small point near it; and over against it, on the Banca side, a single rock is seen above water near the mid-channel.

The distance between this watering place and Banca is about one league. There is about mid-channel, a reef on which the sea breaks, wherein you see several rocks even with the water's edge; between the island and the reef there are likewise many rocks under water: in mid-channel, where you find no stones, the depth is about 2 and $2\frac{1}{2}$ fathoms.

To go with greater ease to the watering place, you must range the island on the east side; and when you have doubled the north-east point you descry several coves with white sand, but the cove where you water has brown sand. At low tide you see the water running, whereas at high water you cannot perceive it, on account of a great morass which is over against it, so that you must be upon the land to find it out.

The whole east side of the island is easy to be approached with boats. You find also fresh water near the south-east point, in a small river whose opening is seen when you range along the shore, but it is not so good as in the former place.

When you are off the northernmost island, steer by the Third point, and leave the Coast of Banca, along which are several dangers, and in general very foul ground.

From the Nanca islands, when the weather is clear, you may see, to the N. W. by W. the high mountain called MONOPIN HILL, situated on the west end of the isle of Banca. Its height shews it a good way off, and it is a sure mark to enter the straits in coming from the northward, or to go out of them when you come from the southward.

The THIRD POINT of the straits, a little higher than the others, is distinguished by a beach of red sand: from this point steer W. by N. toward the Fourth point, which lies from it W. $\frac{1}{2}$ N. 20 miles. You sail a little more northerly than the bearing of these two points, to avoid the edge of the banks off the river Palimbam or Palambang; these begin immediately after the FOURTH POINT, about which you often find unequal depths of

of 12, 8, and 6 fathoms; this is not to be wondered at, as it deepens again by standing a little to the northward.

The first entrance of river which shews itself beyond the Fourth point, is not the true mouth of the PALIMBAM; but you see it soon after, as well as the second mouth, which separates in two branches, though this last double branch disembogues itself by one mouth in the Straits. The Dutch have a settlement 14 or 15 leagues in land; and their chief trade consists in pepper, tutenague, and rattans or small cane.

"To the westward of the Fourth point is a bank, on which the *Stafford* (in company with the *York* and *St. George*) was aground: a small snow coming by, ran aground also. The bearings on board the *Stafford*, while on the bank, were the Third point, being the easternmost land in sight, E. S. E. The Fourth point S. E. by E. the westernmost land of Sumatra, in sight, West; the westernmost land of Banca N. by W. Monopin Hill North, off the Sumatra shore $3\frac{1}{2}$ miles. Sending the boat to sound, found the bank run quite to the shore, and to the Fourth point. It is soft mud at the edge of this bank, which is hard sand, and so steep, that in running across it, in 3 or 4 boats length, had from 7 to 3 fathoms. The *York* in the morning, could not come to the anchor she let go over night."

Four leagues N. E. by N. off the Fourth point, is also a dangerous reef formed by several heads of rocks, encompassed with sand, and just above water: Mr. *D'Après* found 20 fathoms water, about a ship's length from its edge. S. W. by S. 5 or 6 miles from this is a bank of 10 fathoms; any one, not apprised thereof, by sounding on it, in the night, might think himself on the edge of the Sumatra bank, and by standing off should be in danger of running upon these rocky heads.

The tides run in and out of Palimbam river with great rapidity, especially in the rainy seasons, which cause it to overflow greatly; then the water appears muddy round about, several drifts float along upon the water, and sometimes even 3 or 4 trees surrounded with bushes, resembling floating islands, which the violence of the torrent drives into the sea. In sailing from this river, you must guard against the force of the flood, which sets toward the banks, and that of the ebb, which runs toward the Banca shore: there the soundings are very dangerous; for besides the different reefs you meet with, there is a considerable bank of gravel that extends $1\frac{1}{2}$ league S. W. off the west point of the island, and near which is a rock with only 9 or 10 feet water.

In sailing from the Third to the Fourth point, when Monopin Hill bears N. N. W. you must steer N. W. by W. to range the banks off Palimbam river; but whether by day or night, you must not approach them under 8 fathoms. Continuing this course, you discover to the N. W. the false POINT OF BATACARANG, and soon after the true one: these two points, and the low land which lies at the foot of Monopin hill, 6 leagues to the eastward, terminate the Straits of Banca on the north-west side.

" You may sail safely along the Palimbam banks, even in the night, by your lead and a boat on your larboard-bow, up to Batacarang Point; and taking care not to go farther from the Sumatra shore than 9 fathoms, you cannot come near the FRIDERICK-HENDRICK.

" This rock rises in a sharp point, on which, at low water, there is 9 feet water, and fits on a mass of the same stone, on which are $2\frac{1}{2}$ fathoms; at neap-tides it shews a forked reef on the surface of the water. Between this, and the Coast of Sumatra, the channel is about 7 or 8 miles broad, and the safest navigation is in 7 fathoms; on no account exceed 10 to the eastward, nor come under 6 to the westward, keeping always in soft muddy ground; neither be deceived by thinking the deeper water the safer, for just without this rock is 15, and at a very small distance 10 fathoms. A Portuguese ship in 1746 was on the rock, and lay a tide; the point of Banca then bore E. S. E. and Batacarang Point W. $\frac{1}{4}$ N. the ship struck fast forward, and had 4 fathoms abaft.

" By the *Cæsar's* journal, Captain Mabbot, who, in 1728, anchored in 16 fathoms within a cable's length of this rock, it lies E. S. E. $\frac{1}{4}$ S. and W. N. W. $\frac{1}{4}$ N. with the highest part of Monopin Hill, distance about 4 leagues; and from Batacarang Point N. N. E. easterly distance about 5 leagues. He found when he founded on it $\frac{1}{2}$ less than 3 fathoms, and judged it was near high water, as afterwards he saw the sea break upon it. *Note*, The flat of the south-west hook off Monopin hill, is 4 miles from the shore, in a semicircular form, about 4 miles in length, but pretty narrow, and deep water between the hook and the main.

" A little before, or when you come up with Batacarang point, about 5 miles distance, viz. From its bearing N. W. by N. W. by N. and you in 10 fathoms, you haul more to the northward, and presently shoal your water, that when it bears W. by S. $\frac{1}{4}$ S. you will be in 6 fathoms; then steer N. by W. nearly, and you will keep that depth. When you bring the northernmost point of Banca to bear East southerly of you, or E. $\frac{1}{4}$ S. steer away N. by E. or N. by E. $\frac{1}{4}$ E. which course you will find from 7 fathoms gradually increasing to 14. When Poolo Taya bears N. W. of you about 4 leagues, you must steer N. N. E. $\frac{1}{4}$ E. 20 leagues, and you will have soundings from 18 to 24 fathoms, and then haul in N. by W. and N. N. W. to make Poolo Aor."

We must not conclude this article without adding the following remarks from the journal of Mr. *Peter Stuart*.

TO AVOID THE FRIDERICK-HENDRICK, IN COMING FROM THE NORTHWARD.

"BEING too far from the Sumatra shore," says the journal, "deepened our water to 9 fathoms, hard ground, but upon hauling S. by W. in 2 casts had soft ground again, (shoaling gradually) steering in S. S. W. for the Sumatra shore in $6\frac{1}{2}$ fathoms, till the westernmost land bore W. S. W. and Batacarang point South, shoaled our water very gradually to $\frac{1}{2}$ less than 5 fathoms, although from the bearings we hauled off South—S. S. E.—S. by E. and S. E. above 2 hours with a moderate gale. This flatening surprised those that were unacquainted with it, though there is no danger as long as you are in soft ground. When the fore and westernmost land bears West you will deepen your water suddenly to 12 fathoms.

"To avoid the Friderick-Hendrick, people often go so near the rocks, as to be uneasy; the first cast of their lead $\frac{1}{2}$ less than 6, let them steer no farther than W. by S. and as long as they keep under 10 fathoms, there is no danger.

"In February, 1758, being sent from the *Carnarvon* on board a Dutch ship, I saw from thence the Friderick-Hendrick rock, bearing in one with Monopin Hill E. S. E. 16 fathoms, 4 miles distance, and from the Banca shore 4 leagues; it appeared a black rock, just above water; the master of the vessel said it was only to be seen at low water."

DIRECTIONS FOR SAILING FROM THE STRAITS OF BANCA
TO THE STRAITS OF SUNDA.

FRIDERICK-HENDRICK being passed, shape your course to keep mid-channel, to avoid the shoals which project, about 3 miles, from the mouths of Palimban river, as well as the tides of that river, for the flood might drive you on the shoals, and the ebb on the Coast of Banca.

When you are past the Fourth point, keep along the Sumatra shore as far as the Third point, and go within 2 miles thereof: the currents running very strong, and uncertain, sometimes 18 or 24 hours; it is not prudent to sail here in the night. You steer then towards the Second point, keeping 6 or 7 miles off the Sumatra shore, in depths from 10 to 20 fathoms. By so doing you escape the mud bank, which fills up the bay between these two points. Take notice of the tree, which, in sailing from the northward, easily distinguishes the Second point from every other place upon the coast.

Beyond this, keep 2 miles off shore, as far as the First point; and when past it, you stand to the southward, so as to pass 2 leagues to the westward of Lucepara: at this distance you avoid the shoals which surround it.

Between the First and Second point lies a shoal off the Banca shore, almost mid-channel over; so that you must keep 2 miles off shore, taking care not to come half channel over towards Banca. The principal reef, and that which most requires your notice, is situated between the First point and this island; sometimes the sea breaks upon it. The best method to avoid it is, after passing the First point, not to sail above $1\frac{1}{2}$ league from the Sumatra coast, which lies S. by W.

When Lucepara bears East, at the distance above mentioned, steer S. E. to pass it, and get into deeper water. You are sometimes obliged to edge to the eastward, on account of the tides, which, in coming out of the Straits of Banca, take their course toward Great-trees island; it being very shoal along this coast, renders the access dangerous; it will therefore be necessary to keep the lead going.

When you approach the First point of Sumatra, haul in toward it, and as soon as you are abreast of it, 3 miles off, you will see Lucepara S. S. E. $\frac{1}{2}$ E. 5 leagues, when you must steer S. $\frac{1}{2}$ E. till it bears S. E. $\frac{1}{2}$ E. keeping about 3 miles from the Sumatra shore; then steer South till it comes E. S. E. $\frac{1}{2}$ S. the First point N. by W. $\frac{1}{2}$ W. and the southernmost part of Sumatra in sight S. S. W. $\frac{1}{2}$ W. edge over to the S. S. E. towards Lucepara, till it is E. $\frac{1}{2}$ S. or East, and steer S. E. by S. to bring it E. by N. and E. N. E. steer again S. E. till you have brought it N. E. 5 or 6 miles; then S. E. by E. to make it bear North and N. by W. and you are clear of the banks. In observing well these courses and bearings you will have no less than 5 or $4\frac{1}{2}$ fathoms.

From Lucepara shape a course towards the Two brothers, keeping as much as possible, after losing sight of Lucepara, in depths from 9 to 12 and 13 fathoms: if you find it less than 9, as may happen, especially about the shoal of Great-trees Island, edge a little to the eastward; but if you meet with more than 12 or 13 fathoms, near the Two brothers, you must haul in to the westward. By this means, and often sounding, you may always be sure of making the Two brothers; however, you must not expect, between these islands and Lucepara, to find very regular soundings; the inequalities are sometimes considerable, but you cannot be deceived if you keep constantly sounding.

On approaching the Two brothers, if you have not a perfect knowledge of them before night, it will be better to anchor, or put about, than hazard the passing of them in the dark, and thereby risk either the running on the Shahbunder, or the other shoal lying E. by N. of these islands, there being no other way to avoid those dangers, than by keeping a proper distance from the Two brothers. This accident had like to have happened to the *Worcester*, captain *Hall*, they having mistaken some high land on Sumatra for the Two brothers, which at sun set bore S. S. W. but having a squall in the night they anchored in 11 fathoms, and at sun rise saw Sumatra from S. W. by S. to S. $\frac{1}{2}$ W.

Had

Had they not anchored, they would have run into danger. Therefore it is proper to have a perfect sight of them, if you intend sailing in the night. At first sight, coming from the northward, they appear in one, though two round islands; and may be seen 6 or 7 leagues. You may sail as near as you please to the westward of them, having 10 or 11 fathoms within $\frac{1}{4}$ of a mile of them. See what has been said before, page 433.

From what has happened to several ships that have made this passage, it seems as if from Great-trees island the currents, at this season, should set frequently to the south-eastward, so that some have found themselves on North watcher island, instead of the Two brothers. The depth will prevent your being mistaken, having 15 or 16 fathoms about the former, and only 11 or 12 fathoms near the Two brothers.

Therefore, after you have passed the shoal of Great-trees island, haul in a little to the westward, and by keeping $9\frac{1}{2}$ or 10 fathoms, you will be sure to make the Two brothers; but if you exceed 11 fathoms, you will scarcely be able to weather the Two brothers, but fall in with the North watcher. If in the day-time, and clear weather, you may keep sight of the Sumatra shore, coming no nearer than 9 fathoms, because there is a shoal not far off it, which is steep to, from 7 fathoms on sight of the Two brothers endeavour to pass them between 2 or 3 miles.

If for want of observing this, or by contrary winds, you are obliged to pass between the North watcher, and the Two brothers, you range the former at a league distance instead of keeping mid-channel, by which means you may avoid the shoal above mentioned.

Having passed the North watcher, you must take care of a rock under water, on which the ship *Jason* struck, in 1742, on her return from China. This rock lies 2 leagues W. N. W. of the little island Estam, or *Western Isle*, and about 6 leagues S. by W. from the North watcher. You must take care likewise of the shoal on which the *Dolphin* was ashore; it is even with the water's edge and lies S. S. E. about 2 leagues from the south end of the Two brothers.

Ships from the Straits of Banca, going to Batavia, generally make this island, from whence they sail along the Thousand islands, as far as the South watcher 10 or 11 leagues from the entrance of Batavia road.

But being bound to the Straits of Sunda, you must shape your course so as to pass a league to the eastward of *North Island*, steering from the Two brothers between S. W. by S. and S. W. North island is pretty even land, of an oval form, and appears at first rather low, though it may be seen 7 or 8 leagues. The Coast of Sumatra to the south westward of it is shoal, having only 4 fathoms, mud, 2 miles off shore; but you may go quite close to the island to the westward of it, and have very deep water: if you intend watering at North island, anchor with the island, N. N. E. the middle of the islets called the *Three Sisters*, S. W. by S. $2\frac{1}{2}$ miles, the Button, S. S. E. $\frac{1}{2}$ E. the watering

watering place, which is a sandy beach, on the Coast of Sumatra, will then bear about S. S. W.

The winds at this season, blowing from the westward, and the currents sometimes setting out of the Straits, it is necessary hereabout to keep on the Coast of Sumatra, rather than that of Java, in order to enter the Straits of Sunda with less difficulty.

You have 20 fathoms a league off North island, so that if it happens to be a calm, you may anchor near it, for it will not be prudent to lie driving about the Straits mouth. From that island, or hereabouts, you steer to go to the eastward of the *Button*. Then you sail between the *Cap* and the south point of *Thwart-the-Way*, taking care to avoid Brouwere sand, by not bringing the Cap and Anger point in one.

"There is a small shoal with only 3 fathoms that lies between the Button and Thwart-the-way. The *Harrison* struck upon it and knocked off a piece of her main keel: she fetched 4 or 5 fallies and got off, so that it must be very small; it bears about S. E. by S. 3 miles from the Button; and the Dutch say, there is but 15 feet on it, at low water. From the above account, concludes Mr. *George Robertson*, I think it would be advisable not to go between the Button and Thwart-the-way."

As soon as you have passed the reef, which projects from the south point of Thwart-the-way, to go towards PRINCE'S ISLAND, you keep to windward, without coming near the coast of Java, whence it will be difficult to claw off with the winds of the Western Monsoon, which generally are from N. W. This reason should also prevent your going to anchor at Mew island, as the ships which want water may be supplied at Prince's Island.

On the south-east part of Prince's island is an high peaked hill, the highest land upon the island; this hill bearing from S. W. to N. N. W. you have good anchoring ground from 36 to 44 fathoms, about a mile off shore; and when it bears from N. $\frac{1}{2}$ W. to W. by N. little more than a cable's length off shore, there is from 10 to 30 fathoms, coarse sand, with shells and coral. Or bring the hummock S. W. by W. and the easternmost point N. $\frac{1}{2}$ E. and you may anchor in 38 fathoms, fine sandy ground, about $\frac{1}{2}$ of a mile off shore.

The boats go for water about the southernmost point in sight, till they bring the said hummock N. W. by N. then they will open a small sandy bay, at the easternmost part of which is a run of fresh water, and a path cut through the wood to the place where you fill (about 100 yards up) very convenient for rolling your casks; but if you fill below, depend upon it your water will be brackish, though you fill at low water. But this place has been objected to, as the boats have to row round the point against the current, so that they can make but one trip a day; therefore ships for the conveniency of watering, may anchor right off the watering place, where you are as well defended from the N. W. winds as at the former, and the S. W. winds blow equally on both, unless
you

you run in there under 35 fathoms; and then you are in a manner land-locked, which cannot be done off the watering-place. But the conveniency is so great, and the hazard so little, that you may anchor with the high land bearing N. W. by N. in 35 fathoms, soft ground, $\frac{1}{2}$ a mile off shore.

Between Thwart-the-way, and Zutphen or Hounds islands, to the eastward of Hog's point, is a very fine channel to enter the Straits of Sunda, coming from the northward. This channel seems advantageous, especially at this season, because it affords much better shelter from the winds, than that between Java and Thwart-the-way; if you would pass through it, you must steer from North island, so as to range very near Hounds islands, which are steep to, that you may anchor there, in case of a calm; and when you are beyond the southernmost of them, steer so as to pass on the same side of Cracatoa island, and then towards Prince's island. But be careful of the Stroom rock, and observe, moreover when you have passed Thwart-the-way, not come too near Hog's point, because off it there are several rocks under water, which Captain *Hall* saw break for at least $\frac{1}{2}$ a mile.

The STROOM ROCK at the north-west end of Thwart-the-way looks like a boat turned upside down; but at high water there is only a rippling to be seen over it; the same gentleman says that you may go very close to the westward of this rock. The Stroom rock and the want of anchoring ground in mid-channel render this passage difficult; so that upon the appearance of an approaching calm, you should not attempt it; but if it should happen, that after having passed Thwart-the-way, the current should drive you back thither, you must resolve to anchor, and wait for a breeze; you have 45 fathoms to the westward of this island $1\frac{1}{2}$ league off.

To the north-eastward of Thwart-the-way there is a rock near the water's edge, on which the sea breaks: it lies, according to the Dutch, about 2 leagues from the island, and W. by N. $\frac{1}{2}$ N. one league from the Button. There is also a dangerous rock under water 2 leagues S. S. W. from POOLO CRACATOA.

This island, which the sailors call also *Cracata* and *Cracatore*, is remarkable by its peak, and is steep to on the east side: it has on the north part a very convenient watering place where the Dutch ships often stop; there is also a Malay town about $\frac{1}{4}$ of a mile from the watering place, or small river, where fowls, goats, and fruits may be procured.

Several navigators have thought to go out of the Straits of Sunda, by the channel between Prince's island, and Sumatra. It would succeed better than passing to the northward of Thwart-the-way; but the winds from North to N. E. which favour this passage, are generally of short continuance; and, the way being long, you may be liable, during the succeeding calm, to be tossed from side to side by the currents, without being able to help yourself: besides in this part, especially to the northward of Prince's island, there is no depth for anchoring but very near the shore, and the Monsoon wind blowing afterwards, you may, after many difficulties, be obliged to go through the channel between

this island and Java, by which ships are accustomed to go out, on account of the winds and currents that facilitate this passage.

But notwithstanding these advantages, whenever you sail from the anchorage at Prince's Island, or come directly out of the Straits, you must keep as near this island as possible, and avoid approaching Mew island, from whence, at this season, it will be with great difficulty you get off again. In this manner, having reached the south point, you sail along the rocks, called *Carpenters*, which project out from its extremity: here is no danger within a stone's cast. Here you often meet with a violent opposition between wind and tide, when the sea raises and breaks furiously on the west point of Java. This proves the necessity of keeping the opposite side, to prevent your being exposed to evident danger. As soon as you are out of the Straits haul your wind, standing to the southward, to get into the variable winds way, by favour of which you may reach the Cape of Good Hope.

GENERAL INSTRUCTIONS FOR SAILING THROUGH THE STRAITS OF GASPARE.

By Captain JOSEPH HUDDART, December 1788.

“THESE straits, which lie to the eastward of the Isle of Banca, between that island, and the Isle of Billiton, are named after the Spanish captain from Manilla, who is supposed to be the first that attempted to go through them in 1724, though the English ship *Macclesfield* had passed the same straits in the year 1702. Three principal islands are distinguished in the Gaspar straits, viz. SALT ISLAND on the Banca side, LONG ISLAND near Billiton, and MIDDLE ISLAND, so called from its situation between the two others, and on each side of which is the passage.

“There are two dangerous shoals to the eastward of Middle island, and scarce 2 miles asunder, which renders this passage more difficult. Captain *Cooper* passed between them in 1785, and the *Hawke* and *Royal Admiral* in 1788; but I passed to the eastward of them both in 1785, which passage I should always prefer as the safest, on account of the strong currents that set athwart to the south-eastward during the N. E. Monsoon, sometimes above three knots.

“It appears to me that the most commodious passage is between Salt and Middle islands, through which the *Macclesfield*, *Sullivan*, *Hawke*, and *Warren Hastings*, have sailed; for there the currents must set fairer than to the eastward of Middle island. This passage

sage is above six miles wide, and that between Middle island and Long island above 15 miles.

" The shoals, I believe, are in general, coral rock, and steep to. That on which the *Warren Hastings* was aground lies N. N. E. about 14 miles from the north-east point of Banca, and W. by N. $\frac{1}{2}$ N. 8 miles from Gaspar island, according to Captain *Larkins's* journal. I passed very near it in 1785, and saw very strong rippings. The limits of this shoal are uncertain; but it does not extend much farther to the northward, as the *Warren Hastings* went off to the N. E. and then steered to the westward and southward.

" The shoal on which the *Warren Hastings* touched to the eastward of Salt island, appears to lie about $3\frac{1}{2}$ miles N. N. E. nearly from that island, according to Captain *Larkins's* remarks and bearings off the rocks to the southward of the ship at anchor. The south end of Banca and Salt islands appears broken land, and very probably may be small islands, as I was at too great a distance to determine it.

" Ships outward bound to China, intending to go to the eastward of Banca, may steer for Middle island, which bears from the Two Brothers N. $23^{\circ} \frac{1}{2}$ E. distant 49 leagues, keeping in a fair way between Salt island and Sandy island, which lies about 5 miles S. E. by S. from it; they may sail equally safe on either side of Middle island: but if you intend to go to the eastward of it take Sandy island close on board, leaving it on the star-board hand. It is a small low island, the westernmost of those groups which lie to the south-eastward of Middle island. I passed within $\frac{1}{2}$ of a mile of the sandy beach, on the west side of it: it seems a likely place for turtle in the season of laying their eggs. Having passed this Sandy island, bring it to bear S. W. by S. and keep it so, and nothing to the southward; it will take you clear to the eastward of the shoal, which you will easily perceive by the colour of the water. Having passed this shoal you will raise Gaspar island from the deck, bearing about N. by W. to which you may direct your course, and sail midway between Gaspar island and Tree-rock or island, steering about N. by W. till Gaspar bears S. E. when you will be nearly abreast of the *Warren Hastings's* shoal.

" The *Belvidere* was aground on a shoal bearing N. N. W. from Gaspar about 5 leagues, and from the N. E. point of Banca N. by E. $\frac{1}{2}$ E. about 7 leagues. From their remarks, and when upon it, they had a rock bearing N. 42° E. distant about 3 miles. Those have been seen by the *Sullivan*, *Hawke*, and several others. To avoid which it is necessary to keep Gaspar island to the eastward of S. S. E. till you pass this shoal.

" *Poolo Domar* bears from Gaspar island N. 19° W. 112 leagues; and I believe a clear passage.

" Homeward-bound, having passed Poolo Totty, I would not advise the navigator to come nearer Banca than 16 or 17 fathoms, nor more to the eastward than 19 or 20, in the night time, which will lead him in a fair way for Gaspar. But it ought to be remarked that, if a southerly current prevails after passing Poolo Aore or Aro, and Domar,

it will tend more to the eastward after passing Poolo Totty, occasioned by the Coast of Banca trenching to the eastward, which must be guarded against. Gaspar lies $1^{\circ} 49'$ of longitude East of Poolo Domar, and bears S. 44° E. from Poolo Totty; distance 40 leagues. Their difference of longitude about $1^{\circ} 23'$. But there is no necessity to come within 5 or 6 leagues of Poolo Totty. The ship will not make so much easting if the above-mentioned current prevails, which I believe is general during the N. E. Monsoon. The soundings being attended to will be a check, whether sailing in the night, or laying to for daylight, to make Gaspar island.

"Having made Gaspar island, keep it or bring it to the eastward of S. S. E. to avoid the *Balvidere's* Shoal, mentioned before. The track between Gaspar and Tree rock seems the most explored: but that between the rock and the north-east point of Banca may be equally safe and commodious. In either case a birth must be given to the shoal on which the *Warren Hastings* was aground. I saw strong rippings there of considerable extent, which I suspected to be broken ground.

"The passage between Salt and Middle islands, in my opinion, ought to be more especially preferred homeward-bound in the N. E. Monsoon; for the winds here often prevail in the N. W. quarter, and strong currents to the south-eastward, in which I would advise the track of the *Hawke*.

"However, if from circumstances it is advisable to go to the eastward of Middle island, leave both of the shoals to the westward; but keep the easternmost shoal close on board if the wind is to the westward of North, on account of weathering sandy island with a leeward current. This easternmost shoal will shew itself by a breach if there is the least swell, otherwise by the colour of the water and rippling: it is steep to on both the east and west sides. My boat was close to the east side of the breach in 9 fathoms, and the *Hawke* passed within a cable's length of the west side of the rippling.

"Having passed Sandy island, and brought Middle island to bear N. N. E. the Two Brothers will bear S. $23 \frac{1}{2}^{\circ}$ W. distant from Middle island 49 leagues. I have not found much current in the N. E. Monsoon on this passage, but some have experienced a current to the eastward."

REMARKS ON GASPAR STRAITS.

By Captain LESTOCK WILSON of the CARNATIC, 1787.

THIS passage, in the captain's opinion, ought to be preferred; coming from China to the one through the Straits of Banca. It is very short compared with the latter, and there is even a possibility of passing it without anchoring at all; but at most a ship can have no occasion to anchor more than one night; if she has the wind and clear weather.

weather *Gaspar island* bears from *Poolo Totty* S. E. exactly, distance 42 leagues, and you may steer almost direct for it upon leaving *Poolo Totty*. The soundings are more regular, but it seems advisable not to approach *Banca* nearer than 17 or 16 fathoms, and on the other hand, having sight of *Gaspar island*, to avoid bringing it to bear to the southward of S. S. E. $\frac{1}{4}$ E. * (which there be no occasion to do) as from the *Hawke's* journal it appears they saw breakers, bearing N. E. and E. by N. with these bearings 3 leagues off, of *Gaspar island*.

Steering for mid-channel, betwixt *Gaspar island* and the east point of *Banca*, you may pass *Tree Island*, within a mile, or nearer, to the westward of it; and then the winds and currents prevailing at this season, will incline you to borrow upon *Banca*. But you must avoid entering the bay, which is formed by the east and south-east points; and having passed the east point, you must not bring it to the northward of N. N. W. $\frac{1}{4}$ W. The soundings between these two points are the best guide; you may range betwixt them in 14 and 15 fathoms water very regular depths, till the island in the bay bears West of you, and then you will see the reef which runs off the south-east point $1\frac{1}{2}$ mile at least. You must edge over to the eastward, so as to pass without the reef, and having brought the south-west point of *Passage Island* to bear North of you, you may steer to the southward, not bringing to bear farther to the eastward than N. by E. while it continues in sight.

The only objection to the passage seems to be, that lying 23 leagues to leeward of the one by *Lucepara*, it may possibly occasion a difficulty to fetch the *Brothers* (the Two Brothers); to avoid which it will be necessary to attend to the currents, and to anchor in case of their setting strong to the eastward, while the wind is scant.

"But I observe," says the captain, "that the overfalls and irregularities in the soundings, off *Tree Island* (Great trees island) alarm people in the night, and very often occasion as great a difficulty to fetch the Brothers, coming from *Lucepara* as from this channel; as we had instance of, for we fell in with the *Lord North*, and *Pigot* (who had come by that channel) the morning after we had left *Banca*.

* "Captain Larkin," says Mr. Dalrymple, "gives the bearings of *Gaspar* S. 70° E. and *Tree island* S. 17° E. when aground on an extensive reef, probably the breakers seen by the *Sullivan*, bearing W. S. W. 6 miles distant, when *Gaspar* bore S. E. and *Tree island* S. $\frac{1}{4}$ E."

"The *Belviders* anchored 10, latitude observed $2^{\circ} 24'$ South, *Gaspar* E. S. E. $3\frac{1}{4}$ leagues, *Tree island* S. by E. had the shoal about a cable's length distant "N. N. E. and S. S. W. from the ship." They found the shoal about 2 miles in length; in some places from 6 to 10 feet water, and within 20 yards distance 14 fathoms, hard coral. "At anchor 16, *Gaspar* E. S. E. 12 miles distant. *Tree island* S. 20° E. about 10 miles distant a shoal of rocks W. N. W. with not more than 3 fathoms in some places: it appeared to be the length of a cable." These seem to be fragging shoals, with channels between, and therefore, in the day-time dangerous only by neglecting to keep a good look-out from the mast-head."

"The

" The eligibility of this passage for ships outward bound is another consideration, and here I must confess I cannot give it the same preference. Besides that, I believe ships would hardly ever be able to fetch it from the Brothers * till the extent of the dangers off the South end of Banca are better known, the approach of it must be dangerous; and we seem to be equally ignorant of what dangers may lie off the numerous islands lying to the S. E. of Passage island, which makes the east side of the Straits. Were the entrance once explored, and found safe, the passage would deserve every preference."

THE CHINA SEA.

THE MONSOONS, WINDS, AND CURRENTS IN THE CHINA SEA.

FROM the Straits of Sincapour, throughout the China Sea, to the Philippine islands, the Monsoons are nearly the same as on the Coast of Coromandel, and parts adjacent.

The S. W. Monsoon sets in about April, and continues to the beginning of October.

In the Gulf of Siam, on the Coasts of Camboja, Cochinchina, of the Gulf of Tonkin, and of China, it begins between the first days and the end of April; which is to be understood of the coasts only, for in the offing, it commences a month later; and it is from this reason that on the north part of Borneo, on Palawan and Luconia islands, it is not seen to prevail constantly but from the 1st to the 15th or 20th of May.

In June, July, and August, they have much rain, and sometimes fresh gales of wind.

In September the winds are variable, sometimes from N. E. to East, and S. E. blowing fresh with rain, but in general from the S. W. and continue thus to the new or full moon in the beginning of October, when it generally breaks up in a violent storm from the same quarter. Sometimes the storm comes on at West, or N. W. with

* " The ships outward bound that have gone this way, observes Mr. Dalrymple, did not find any difficulty; but certainly ships intending to go this passage ought to pass to the eastward of the Brothers."

abundance of rain ; when the storm ceases, the wind shifts gradually round to the North and N. E. or E. N. E. in which quarter it continues all the N. E. Monsoon.

The whole month of October is rather dangerous, and they have generally some rain ; but after that the weather is fair and settled, and the navigation of that sea is reckoned very safe.

About 25 or 30 leagues to the eastward of the Nicobar islands, in the Indian sea, you lose the S. W. Monsoon, and have the winds favourable from West to North, sometimes S. E.—South, or S. W. but mostly from the N. W. quarter, with some hard squalls, and rain which always come from the N. W. quarter, and are of great service to ships bound to the S. E. through the Straits of Malacca. In these squalls you ought to carry fail, because thereby you will greatly facilitate your passage.

At other times you will meet with little winds that are variable, also calms quite through the straits aforesaid. But as soon as you get clear without Pedra Branca, and the islands off Point Romania, you then get hold of the S. W. Monsoon again, which blows quite through the China Sea to the Philippine islands.

The N. E. Monsoon blows from October to April ; but in January it is reckoned to blow hardest ; and frequently you will have much rain, and a pretty large sea, with intervals of fair weather ; you will meet most likely with this weather near Poolo Sapata, and off Poolo Aore, &c. Yet, as soon as you enter the Straits of Sincapour, you lose all that rough weather, and all the way through the Straits of Malacca to Acheen head, you will have moderate weather.

Sometimes in Malacca road, you will have frequent land-winds from N. E. to East, but you do not find these winds in any other part of the straits, till you get to Acheen head ; there you meet with the N. E. Monsoon.

The N. E. and N. W. Monsoons when near done, blow faint ; and then the land and sea-breezes begin near the shores and continue to blow, more or less, until the opposite Monsoon commences, and gathers sufficient strength to blow steady : consequently there are LAND and SEA-BREEZES in February, and early in March, along the Coasts of the gulf of Siam, and those of Camboja, Cochinchina, Tonkin and China.

Throughout the China Sea the LAND-SQUALLS blow oftener, and usually, but not always, more violent in April, May, June and July, than in August or September, along the Coasts of Camboja, Tonkin, and China. On these coasts, a land-breeze is certainly succeeded by either a sea-breeze, or a wind along shore, sufficient to bring any ship that ran off with the land-breeze, in with the land again.

The S. W. Monsoons constitute a fresh, sometimes a violent sea wind on the Coasts of Camboja, Tonkin, &c. that blows with little variation during the months of May, June, and July.

In the whole of this sea the VARIABLE WINDS perfectly resemble those in the Bay of Bengal.

They

They are subject, as well as the adjacent islands, to severe STORMS and short CALMS, at the same seasons and from the same quarter as those in the Bay of Bengal, northward of Negrais; they generally happen in October and November (for they seldom or never come earlier or later): they begin with a drizzling rain, and the wind about E. S. E. then it increases, and veers to East, E. N. E.—N. E. and North, and ends there, except it is very furious, in which case it sometimes veers to N. N. W. and N. W. where it ends, blowing hardest from the N. N. E. to N. N. W. or N. W. quarter, with a heavy rain the whole time. At this season a storm will sometimes blow for a day or two, from East, or E. N. E. to North, and then all calm for a few minutes; when beginning to blow severely at S. S. W. for half an hour, it quickly ends in fair-weather. This is not so hard as the last-mentioned storms; but is like them attended with much rain, and continues much longer, for the severe storms last not above 6 or 8 hours. It is to be observed that these storms sometimes happen sooner in the China Sea than in Bengal; for they have been met with in August and September, as well as October and November: those in September and October are most frequent and violent.

The China Sea is subject also to dangerous TYPHONS, against which you cannot take too much precaution: their prognostics are thus described by *Antonio Pascal de Rosa*, a Portuguese pilot of Macao.

“ On the 18th or 19th day of the Moon's age, if the Sun sets angry, making the Horizon in that quarter of a deep red, and tinging the clouds with the same colour, a storm certainly follows, increasing speedily from a small air at N. E. (from which quarter it is generally found to blow the hardest) to a prodigious hard gale, about midnight veering to the East and South, round to the westward. When the wind veers to the S. W. the violence is abated; but when these appearances are attended with thunder and lightning, nothing is to be feared but sudden squalls of short continuance.

“ I have been an eye-witness,” continues the pilot, “ of ships oversetting in these seas, by officers despising the prognostic, and neglecting to take in the sails in time. I would therefore advise keeping only the fore-sail abroad, in order to run before it; for the sea rises very confusedly, so that lying-to is often fatal.

“ I do not affirm that the 18th and 19th of the Moon's age are the only periods when a Typhon is to be feared; but they are more constantly felt on these days, than at any other time—observe also that thunder and lightning are the reverse on the coast of these seas, of what they are on others.”

Through the China Sea, at a distance from the shore, the CURRENTS generally run, more or less, toward the N. E. quarter, from the middle of May till the middle of August; and the same way from the middle of October to March or April.

Along the adjacent shores the currents from the N. E. quarter are commonly much stronger in October, November, and December, than the opposite currents are in May, June, and July. They run particularly strong within the islands and shoals that lie near the

the shores: this many ships bound to Canton, and which have been driven among the islands to the westward, have experienced; for they have been obliged to warp up quite to Macao.

The strongest currents, in this sea, are along the Coasts of Camboja, the latter end of November. From Cape Avarella to beyond Poolo Cecir da terra, the current certainly runs from 50 to 70 miles to the southward every 24 hours. Some part of the stream setting into the Straits of Malacca, causes the tide to run 9 hours one way, and only 3 hours the other. The same happens sometimes in May and June, from the current occasioned by the S. E. and S. W. Monsoons.

In April the currents begin to run, more or less, to the northward, through the Straits of Banca, and past the Straits of Malacca, and along the west side of the Gulf of Siam; but along the north-east side of the same gulf, they set pretty strong to the E. S. E. until the eastward of Point Ooby; then they bend to the N. E. quarter, and run along the Coasts of Camboja, Cochinchina, and China, till September, when the opposite Monsoon and currents begin to prevail from the N. E. quarter, and continue to March or April.

DIRECTIONS FOR SAILING

1° FROM THE STRAITS OF BANCA TO POOLO AORE.

HAVING passed the Frederick-Hendrick, you steer N. by E. to go between the SEVEN ISLANDS and Poolo Taya: the former lie about 14 leagues on this point of the compass from Monopin Point, in $1^{\circ} 7'$ South; they are of various sizes, and high enough to be seen 8 leagues off. The southernmost appears very small, and a little separate from the rest; the westernmost is the largest: the coasting along these islands is safe on the west side, but on the east side, and between them, the dangers are not known.

POOLO TAYA, about 25 miles N. W. of the northernmost of the Seven islands, is high, and may be seen, in clear weather, 10 or 12 leagues; on the north side of it are two great rocks; it lies in $48'$ latitude South. In sailing from the Straits, towards these islands, the depth increases from $7\frac{1}{2}$ to 12, 15, and 17 fathoms. In the night-time, or in cloudy weather, you may perceive whether the currents set to the westward by the soundings decreasing, and the bottom being sand mixed with ooze; whereas on the Banca side they increase, and the bottom is only clear ooze.

Beyond Poolo Taya, there are islands of several sizes, and all in general exceeding high: the most considerable is POOLO LINGING, which shews itself above the rest, by

3 N

a mountain

a mountain whose top terminates in two pointed spires, like two steeples near each other. On the east part of the island there is another hill that is joined to the first by a low land which at a distance makes it appear like an island. This hill is not so high as the former, and is smoother at the top; to the East of it, lies a small islot of moderate height, covered with wood, and distant $1\frac{1}{2}$ league from the point of Poolo Linging. Between Poolo Taya, and the south point of Poolo Linging, there is a dangerous bank on which the *Ilchester* was a-ground in 1754; and to the northward of the east point of the same island, exactly under the Line, you perceive several small and low islots, which are called *The Dominis*.

When you are about 5 leagues East of Poolo Taya, steer N. E. by N. till in the latitude of 30' North, to go without the two shoals, the easternmost of which, (where there are breakers, seen by the *Hardwick*) lies N. E. by N. of the east point of Poolo Linging. The soundings in this track, between Poolo Taya and the Line, are 18 or 20 fathoms, fine gray sand, and beyond it 24, 25, and 27, the same ground.

Having doubled the banks above mentioned, you must steer N. by W. to get sight of POOLO AORE. If you should happen to be set to the eastward, towards the *Anambas*, you may be apprised thereof by your soundings, which will be 45 and 50 fathoms, mud; whereas, in the fair-way to Poolo Aore, you have only from 28 to 35, fine gray sand, sometimes a little coarser, mixed with small black stones and very little mud.

2° FROM THE STRAITS OF SINGAPOUR TO POOLO AORE, POOLO TIMON, &c.

IN going out of the Straits of Sincapour, stand no nearer Point Romania than 15 or 16 fathoms, and when this point bears North, Pedra Branca is to be seen off the deck. This rock, as we have already observed, is very steep; if a leading gale serves to go out, steer for it in 20 fathoms, and as you near it, you will have irregular soundings: you may safely pass it within $1\frac{1}{2}$ mile, in depths from 30 to 39 fathoms.

Stand to the eastward from Pedra Branca, till Bintang hill bears S. S. W. or S. by W. $\frac{1}{2}$ W. and Barbucet hill W. by S. which is a general rule, before you bear away for Poolo Aore. Steer N. N. E. or N. by E. towards this island, which is bearing N. N. E. $\frac{1}{2}$ N. 25 leagues from Point Romania.

You pass to the eastward of POOLO TIMON, an high land which makes in a peak gradually rising from the east coast; to the southward of it there are some small islots, and S. E. by S. 3 leagues, (or 8 leagues S. W. by S. from Poolo Aore) there is a rock even

even with the water's edge, which you must avoid in sailing to the latter island. Poolo Tingy lies about 10 leagues S. W. by W. $\frac{1}{2}$ W. from Poolo Aore and 3 leagues N. W. of this is POOLO PISANG; the smallest of the three is about $1\frac{1}{2}$ league long. You sail to the eastward of these islands in soundings from 30 to 40 fathoms. The channel between the islands North of Poolo Aore, and the south point of Poolo Pisang is about 2 leagues wide, and free from danger.

POOLO AORE, or POOLO AURO, is a small but woody island, making two hills like a saddle when it bears N. E. but the easternmost is the highest; when it bears N. W. it has a different appearance, the two hills being shut in one. Near the south-east point is a little island covered with cocoa-trees, and 3 or 4 others on the north side. This island affords water and some refreshments; you may anchor either off a small sandy bay to the eastward, in the western Monsoon, or in another to the westward, in the eastern Monsoon. Poolo Aore is the easternmost of the group of islands in that part, and lies between $2^{\circ} 29'$ and $2^{\circ} 30'$ north latitude.

From Poolo Aore to Poolo Timon, the course is N. W. by N. about 10 leagues: the depth of water between them from 36 to 30 fathoms.

In the months that the Monsoons shift in, the current runs very strong amongst the islands Aore, Pisang, and Timon, and between them and the Anambas; they are very changeable, setting, at the latter end of September or beginning of October, for several hours together, to the S. S. W. and S. W. by S. $1\frac{1}{2}$ or 2 knots per hour, and after ceasing for some time, will set to the southward, at the rate of 1 knot, and then S. S. E.—S. E.—E. S. E. and sometimes to the N. E. $1\frac{1}{2}$ knot, for several hours: then they cease again for some time, and run to the South and S. S. W. as before. In the month of April, when the Monsoons shift again, the currents run as fast to the northward, from N. by W. to N. N. E. and N. E. at the rate of 1 or $1\frac{1}{2}$ knot, and sometimes 2 knots. So those who come this way in the aforesaid months, and in hazy weather, or the night time, must have great regard to the currents, or they will be much deceived. In the other months, after the Monsoon is set in, the currents are pretty regular and constant in both Monsoons. In the S. W. Monsoon the current, from Pedra Branca to Poolo Aore, &c. sets N. by E. or N. N. E. about 1 knot. At Poolo Aore, and between it and the Anambas, it runs North, and N. by E. $1\frac{1}{2}$ knot; and so to the north part of Poolo Timon. From Poolo Timon, for 20 leagues to the northward of it, you will have a current setting N. by E. about 1 knot; then it ceases, and you find little or no current afterwards, as you sail on to Poolo Condore, Poolo Sapata, or indeed all over the China Sea, in either Monsoon, except at the time of their shifting. In the N. E. Monsoon the direction of the currents is just the contrary way, at much the same rate.

3° FROM THE STRAITS OF SINGAPOUR TOWARDS THE GULF OF
SIAM.

MOST ships bound to the Gulf of Siam, after doubling the reef off Point Romania, keep along the Malaya coast in 14 and 15 fathoms; passing to the westward of POOLO TINGY, and the islands to the northward, through the channel in which there is not less than 8 or 9 fathoms.

The following is an extract from the journal of a very experienced navigator, who sailed to the eastward of Poolo Tingy and passed to the northward, between it and the islands lying to the N. W. thereof; it will afford some knowledge of these parts, as far as Poolo Varella, that lies 9 leagues N. W. by N. from the north point of Poolo Timon.

"June the 17th, 1782. Sailing from Pedra Branca we stood to the eastward $2\frac{1}{2}$ or 3 leagues, rather for form's sake than through necessity, to double a bank which the Portuguese charts make to run out a good distance from Point Romania, or Point Johor, as they name it. I saw no likelihood of its projecting so far out as these charts represent. I steered North and N. by W. with a steady gale a W. S. W. to get sight of Poolo Tingy, and though the tides were against us, that did not hinder us from perceiving it about midnight, from N. N. W. and N. W. by N. of us, and Poolo Aore North; so that on the 18th day at noon we were a league to the northward of Poolo Tingy. There I observed, in a little bay on the north side of that island, some banana-trees, palm-trees and huts: the depth off this bay, at the above distance, is 14 fathoms, sand and ooze.

"We steered W. N. W. and N. W. by N. to go between Poolo Tingy and a large island to the north-westward; this is long and high, lying North and South, and its western shore is embellished with a fine border of fine white sand: about a gun shot from it there is a lesser one, but equally high. When the large island bore N. N. E. we stood to the northward; leaving it on the starboard side, and the islands near the shore on the larboard. Throughout this whole track we found 14, 12, 8 and 7 fathoms, sand.

"Having been set off to seaward from the continent, and being about $1\frac{1}{2}$ league to the eastward of the north part of the large island, in order to get in with the land again, we steered N. N. W. and N. W. by N. So that on the 19th at noon POOLO VARELLA, a little island, which lies off the main land of Malaya, bore East, 3 leagues of us. In this track we had 10, 8 and 6 fathoms, sand, gravel, and sometimes ooze. At the same time Poolo Timon bore from S. E. to S. E. by E. about 11 or 12 leagues. The land of Malaya, thus far, is low by the sea side, with a sand shore and some downs.

The winds blow in the day-time from the S. E. and in the night shift round to the westward, till about 10 or 11 o'clock in the afternoon."

By this extract it is proved that you may safely pass between these islands and the main. Nevertheless those who are sailing this way should keep a good look out for some rocks laid down in some draughts, between this island and the main, near the water's edge.

DIRECTIONS FOR SAILING FROM POOLO AORE TO POOLO TIMON—THE ANAMBAS—POOLO DOMAR.

WE have said just now that Poolo Pisang lies 3 leagues N. W. of Poolo Aore, and that the course from Poolo Aore to Poolo Timon is N. W. by N. about 10 leagues, with a depth of water from 36 to 30 fathoms. The body of the latter island bears N. N. W. of Poolo Pisang; and from the north point of this it is computed 3 leagues to the south point of the other, near which is a little islet or rock which must be coasted to the southward, when you sail through the channel for the west part of Poolo Timon.

POOLO TIMON is the northernmost and largest island; the north part of it lies in latitude $3^{\circ} 0'$ North; it is so high that the top of it is sometimes hid by the clouds, and there is one mountain terminating in two points, like the ears of an ass, which seamen have therefore called by that name.

"Poolo Timon may be seen 20 or 21 leagues; I have seen it very plain," says Mr. *Robertson*, "bearing due South, 19 leagues." There is good anchorage and good water on both the east and west coasts; the dangers are all apparent, the bottom clear, and the island is very plentiful in refreshments. The most considerable village stands in the south-east part, at the bottom of a little sandy bay, where you may anchor in 20 or 22 fathoms, sand.

In landing at Poolo Timon, or at any other of these islands, you must be on your guard against the Malays by whom they are inhabited: do not trust to their hospitable appearance, with which they will attempt to deceive you: you must always be well armed, and not go too far from the sea side, but make them bring the commodities you would purchase.

At the north-west end of Poolo Timon are 3 little islands, between which and the great one, the channel is very deep and consequently safe; near the latter, under the shelter of these islets, there is very good anchorage in 12 fathoms.

To

To the eastward of Poolo Timon, about 25 leagues and about 23 N. E. by E. from Poolo Aore, you meet with another cluster of islands of different sizes, and little known, which are called the GREAT or MIDDLE ANAMBAS: they are very high, and lie in about 3° north latitude. The soundings in the channel between these islands and those of Timon and Aore, are so much alike in point of depth and quality of ground, that they can never indicate with certainty on which side of it you are.

About 20 leagues N. E. by E. from Poolo Aore and 21 E. by N. from Poolo Pisang is the little islet or rock called POOLO DOMAR 5 or 6 leagues to the south-westward of the Greater Anambas. It is as high above water as a ship's main-top, and twice or 3 times the length of a large ship; the sides of it are almost perpendicular, and look very white when the sun shines upon them: there is no fear of this rock in the day-time, but you ought to be cautious in the night. Poolo Pisang, Poolo Aore, and Poolo Domar, have been seen at the same time.

Twelve or 13 leagues to the northward of the Great Anambas, lie another cluster of smaller islands to which they have given the name of NORTH ANAMBAS.

DIRECTIONS FOR SAILING FROM POOLO TIMON TO POOLO CONDORE.

BEING the length of Poolo Aore or Poolo Timon, there is a necessity of making Poolo Condore, for the greater certainty of making Poolo Sapata, and to avoid the Middelburg Rock, as well as the other shoals to the south-westward of it.

POOLO CONDORE bears N. 26° E. distance 121 leagues from Poolo Timon. Those who sail from one to the other in the western Monsoon, must not content themselves with shaping the course according to their situation, but must be careful to guard against the currents, which in this Monsoon set to the eastward, and generally cause some difference that way. Their velocity does not depend upon the force of the wind, as several pretend; for it has been observed, that with a moderate breeze the difference has been as considerable as with a strong gale; and experience invalidates the opinion of these currents and the wind having the same direction, since from a South or S. S. W. wind you find, contrary to this rule, as great a difference to the eastward, as with the wind at W. S. W. therefore this opinion must be erroneous.

In the first case, where the direction of the wind is the same with that of the two places, the only difference is that you make a quicker passage than was expected; yet this does not oblige you to take a sweep more one way than another. In this part then it is
very

very difficult to settle a certain rule concerning the direction and strength of the currents. You may however be sure of making Poolo Condore; if in sailing from Poolo Timon, you steer N. by E. 4° E. about 80 leagues, then N. N. E. to get sight of the island, which may be seen 15 or 16 leagues off, in clear weather. This is the way to prevent the usual set of the currents. At 5 or 6 leagues to the southward of Poolo Condore, there are 21 or 22 fathoms, fine gray sand, with small shells. If you have this depth, and in the latitude of $8^{\circ} 20'$ North without seeing it, and that by standing North, or N. N. E. it decreases to 17 or 18 fathoms, this will shew that you are to the westward of Poolo Condore; on the other hand, if it increases to 24, 25, and 26, you will find yourself to the eastward thereof.

The following soundings with the bearings of Poolo Condore are given by Mr. *Nichelson*. Poolo Condore bearing N. by E. $\frac{1}{2}$ E. distance 16 or 17 leagues (at which bearing and distance it can be seen in clear weather) you will have 20 fathoms, fine white sand, with black specks;—N. N. E. 9 or 10 leagues, 20 fathoms, fine white sand—N. by E. 4 or 5 leagues, 19 fathoms, ditto—N. W. 7 or 8 leagues, 21 fathoms, ditto—West 12 leagues, 24 fathoms, ditto—W. by S. $\frac{1}{2}$ S. 22 leagues, 28 to 30 fathoms, fine gray sand—W. by S. $\frac{1}{2}$ S. 25 or 26 leagues, 37 fathoms, fine dark-coloured sand—W. by S. $\frac{1}{2}$ S. 40, 41, or 42 leagues, 48 or 50 fathoms, fine gray sand, and you will have no soundings to the eastward of this.

POOLO CONDORÉ is not one island only, but consists of several near one another, about 15 miles in length, which are all very high and covered with trees. They lie about 17 leagues S. by E. from the mouth of Camboja River. The large island, which is the only one inhabited, is about 3 leagues long and $1\frac{1}{2}$ a league in its greatest breadth, and lies N. E. and S. W. It is a ridge of high mountains, of very difficult access, and separating the harbour from the great bay where the inhabitants dwell: these amount to about 200, all fugitives from Camboja and Cochinchina; and all exceedingly slothful, covetous, selfish, and poor.

The middling island is as mountainous as the largest, but not so high; its length is one league, and its breadth $\frac{1}{2}$ a league, in a S. E. and N. W. direction. Its advantageous situation to the westward of the great one, forms between the two an exceeding good harbour, capable of containing 8 ships; the entrance is $\frac{1}{2}$ a league wide, and the bay is equal to the length of the middling island; but ships cannot get to the farther end on account of the shallow water. Here the Great and Middling islands are so near, that there is but a narrow passage left for boats, canoes, and proes. The tides, at the full and change, flow here N. E. and S. W. or at 3 o'clock, and the sea rises and falls 3 feet. The height of the hills darkens this harbour, and renders the air thick and very unwholesome.

On the other side of the hills at the south-east part of the Great island, there is a very spacious bay, at the entrance of which, some little islands are so disposed, that they close

it up, as it were half-way; so that the anchorage would be very good and safe if the bay was not so wide, and so much exposed to the winds which blow in the easterly Monsoons. Its chief entrance is to the S. E. the other two are neither so good nor so convenient. Within this bay, upon a marshy and sandy plain, is the village, consisting of about 40 huts; here may be seen the remains of the English fort.

This island produces only potatoes, small gourds, water-melons very bad, and black beans, all in small quantities; it produces likewise many forest trees, some of which are fit to make masts and yards for ships. The Middling island has some wild oxen and hogs sprung from the tame ones left there by the English. Poolo Condore has no springs, affording only rain water, which running down the mountains among the rotten leaves, wherewith the ground is covered, acquires a certain tincture, with an unwholesome quality; therefore the inhabitants prefer the whitish water of their wells, to the clear water from the mountains. Their only game consists in some wild pigeons and a sort of woodcocks. The island abounds in reptiles and insects, both troublesome and hurtful: there are also a number of apes, and monstrous lizards 5 or 6 feet long, which destroy all the poultry, and small ones winged, that fly from tree to tree; others which hiss, whose sting is mortal; snakes of a prodigious size and length; other small ones, exceedingly venomous: centipeds, scorpions, rats, and in short an infinite variety of insects, bred by the excessive heat: but the ants are the most troublesome of all: they get into every thing, and spoil whatever they come at. All these, with the sterility of the soil and the unwholesomeness of the air, render Poolo Condore a most wretched abode.

The English however settled there in the year 1702, when the factory of Chusan, on the coast of China, was broke up. They brought with them some Macassar soldiers who were hired to assist in building a fort, and to be discharged at the end of 3 years; but the chief not fulfilling his engagement with them, they waited an opportunity, and one night murdered all the English in the fort: those without the fort hearing a noise took the alarm, and ran to their boats, very narrowly escaping with their lives, to the Johor dominions, where they were treated with humanity. Some of them afterward went to form the settlement at Benjar-Masseen on the island of Borneo.

The latitude of the place where the English fort stood is (as observed by father *Gauvil*) $8^{\circ} 40'$ North, and its longitude $106^{\circ} 13'$ East of London, $2^{\circ} 4'$ East of Poolo Timon, and $2^{\circ} 5'$ West of Poolo Sapata.

DIRECTIONS FOR SAILING FROM POOLO CONDORÉ TO POOLO SAPATA.

DANGERS ABOUT POOLO SAPATA—MIDDLEBURG SHOAL, &c.

BEING 7 or 8 leagues off Poolo Condore, in 20 fathoms, or even 9 or 10 leagues from it, in 22 fathoms, you must steer N. E. $\frac{1}{2}$ E. for Poolo Sapata, which will carry you far enough without it, or N. E. by E. which will bring you but just in sight of it, in clear weather; you have soundings all the way between the two islands. POOLO SAPATA, or *Shoe Island*, is so named from its having the resemblance of a shoe in some points of view, but its appearance varies according to the different bearings. "When it bears North," says Mr. *Robertson*, "it is extremely curious, and looks like as if it were going to fall to the right; both sides in that point of view stand a great way off their center." Ships bound to, or coming from China or Manilla, by the usual track, always endeavour to make Poolo Sapata, which lies in $10^{\circ} 2'$ latitude North. It is the southernmost of the small islands called *The Catwicks*; N. N. W. 4 leagues from it lies another round island, which is the westernmost, or *Great Catwick*, and between them is a rock above water, called the *Little Catwick*, which resembles a pyramid; there seems to be a reef running from this to Poolo Sapata, and likewise a great rippling toward the N. E. by E. about 6 miles.

Poolo Sapata being pretty high may be seen in clear weather 10 or 11 leagues, from the quarter deck of an Indiaman, and the two other Catwicks are descried at 8 or 9 leagues.

To the south-eastward of Poolo Sapata there are *Two dangerous shoals* whose extent is not better ascertained than their respective distance from the island; the first has been seen by the French in 1730 and 1733, and by a Swedish ship in 1744; the sea breaks upon it, and it lies about E. S. E. from the body of Poolo Sapata, 3 or 4 miles. It was seen again in 1758 and 1761 by captain *Haggis* of the *Prince Henry*, who is confident that its distance is not above 5 miles from Poolo Sapata, and that bearing S. E. by E. $\frac{1}{2}$ E. it is in one with Sapata. The other shoal, which might be only an extension of the first, lies also about E. S. E. and better than 3 leagues off, according to captain *Webb*, who saw it in September 1751.

To avoid this shoal it does not seem prudent, chiefly as there is no occasion, to go nearer Poolo Sapata than 4 leagues, not even in clear weather. Another danger lies to the westward of the Catwicks, against which prudence equally requires that you should keep a good look out, viz. a *Rock* lately discovered 4 leagues west of the *Great Catwick*.

There is also between Poolo Condore and Sapata, a small rock, even with the water's edge; it has been discovered by captain *Boone*, and is made to lie 15 leagues E. by N. from the latter island, but several navigators deny its existence.

The following account of the depth of water, &c. in the vicinity of Poolo Sapata is taken from Mr. *Nichelson*.

Poolo Sapata bearing	Distance	Depth of water and quality of the ground
N. E. $\frac{1}{2}$ E. - -	8 or 9 leagues - -	42 fathoms, coarse gray sand, with some small stones, and black specks like pepper-corns.
N. E. by E. - -	10 leagues, and the westernmost Catwick N. N. E. $\frac{1}{2}$ E. 7 or 8 leagues - -	52 ditto, fine brown sand.
E. N. E. - -	8 leagues, and the westernmost Catwick N. E. 6 leagues -	46 ditto, fine gray sand.
N. E. - -	9 leagues - -	96 ditto, mud and sand.
N. N. E. - -	8 or 9 leagues - -	78 ditto, ooze. Here the current sets S. S. W. 2 knots and 3 fathoms, the latter end of September.
N. E. by E. $\frac{1}{2}$ E. -	9 leagues - -	72 ditto, ooze.
N. E. by E. $\frac{3}{4}$ E. -	5 leagues - -	70 ditto, ooze and white sand.
N. by E. $\frac{1}{2}$ E. -	7 miles - -	75 ditto, ooze.
N. by E. - -	4 leagues - -	80 ditto, ditto.
N. by E. - -	7 or 8 leagues - -	85 ditto, mud and sand.
N. E. $\frac{1}{4}$ E. - -	7 leagues, and the westernmost Catwick N. by E. $\frac{1}{2}$ E. 8 leagues, and - -	62 ditto, ooze and sand.
	N. N. E. 7 or 8 leagues - -	72 ditto, ditto.

" By this it appears that there are regular soundings all the way between Poolo Condore and Poolo Sapata; that the water deepens fast as you come near Poolo Sapata, and that the bank goes off suddenly from 85 to 90 fathoms, and no soundings.

" When Poolo Sapata bears about N. by E. you are then going off the bank: at that bearing, 7 or 8 leagues off, you have 85 fathoms; this is the edge of the bank. A very little to the eastward or southward thereof, you have no soundings, which shews that there is none to the eastward of Poolo Sapata, and that there is deep water very near it.

" In or near the latitude of Poolo Sapata, if you have under 48 fathoms, you are to the westward of it; if you have 52 fathoms in the stream of Poolo Sapata, in the fair way

way between it and Poolo Condore, it will bear from E. N. E. to N. E. by E. 10 leagues. If you have 70 to 85 fathoms, you are to the southward of Poolo Sapata, and near the edge of the bank; and Poolo Sapata then bears from N. by E. to N. N. E. from 4 to 8 leagues; therefore, being in the latitude of Poolo Sapata, and no soundings, you may be sure you are to the eastward of it."

"The eastern part of the Romania reef," says Mr. *Robertson*, "runs from Pedro blanco (Pedra branca) N. E. by N. Bintang hill bearing S. by W. $\frac{1}{2}$ W. is the leading mark to clear the reef—a N. N. E. course from these bearings will bring a ship in mid-channel between the Auro and Anamba islands; from that situation, continuing on a N. N. E. course, it will carry you 31 leagues to the eastward of Condore, in 42 or 43 fathoms, fine dark sand, and will bring you up in sight of Sapata, which will bear N. by E. when 6 leagues off it."

The MIDDLEBURG SHOAL was seen by the *General Coote*, captain *Baldwin*, going to China in 1786; according to that ship's account it lies 20 leagues due South from Poolo Sapata. M. *D'Après* places it at the same distance, in $9^{\circ} 4'$ latitude North, but to the S. by E. adding that it stretches 2 leagues N. E. by N. and S. W. by S. and that another shoal lies 6 leagues from it E. 5° S.

DIRECTIONS FOR SAILING FROM POOLO SAPATA TO THE COAST OF CHINA.

HAVING passed Poolo Sapata, 5 or 6 leagues to the eastward, the course is N. E. $\frac{1}{2}$ N. to get soundings on the MACCLESFIELD SHOAL, situated between the parallels of $15^{\circ} 10'$ and $16^{\circ} 17'$ North; in following this track you leave to the starboard the ANDRADA ROCK, and the VIGIA OF ELEVEN DEGREES. The first is a small rock just above water, 19 leagues to the westward of Poolo Sapata. The Vigia, in latitude 11° North, is a sandy island, near the surface of the water, which has a reef at each end. The *Montague* and *Cambridge* made it on a N. E. by E. course from Poolo Sapata in $11^{\circ} 5'$ North, by a good observation.

N. E. $\frac{1}{2}$ N. from the latter island, in latitude $12^{\circ} 45'$ North, is a bank of 20 fathoms. Several ships going to China, have actually seen the colour of the water changed hereabout. Though this bank is not dangerous, you avoid in steering N. E. as far as its latitude, from Poolo Sapata, and then N. E. by N. for the

MACCLESFIELD SHOAL, which the French call the *English Bank*, from its having been discovered in 1701, by the English ship *Macclesfield*, is a rocky bank under water, whose extent from North to South, as above mentioned, is well known; but the limits

of the eastern edge seem to be better ascertained, than those of the west side. On it are various depths; 48, 40, 35, 30, and 20 fathoms are the most common; on the easternmost part you have 40 and 45 fathoms, and very little to the eastward of these soundings, no ground. The north-east extremity appears to be the shoalest; there you find several spots of 10 fathoms, and immediately after, sailing to the East, the depth exceeds 60 fathoms, by which you may judge of the steepness of that edge. "It is more than probable," according to Mr. *Robertson*, "when you meet with these soundings, that you are on the eastern part of the shoal, for there appears no such depth on the western part; and one general rule ought to be always adopted in case of meeting with it, which is, to haul immediately to the eastward until you deepen."

To the north-westward of the Macclesfield Shoal, about 22 leagues, begin several scattered shoals of various sizes, which occupy a space of about 30 leagues in breadth. The nearest to the Macclesfield is the *Lincoln Shoal* in $16^{\circ} 40'$ latitude North; and 16 or 17 leagues N. by W. from this are the *Amphitrite shoals and rocks*, which are also called the *Triangles*; to this assemblage of dangers the Portuguese have given the name of the *Spectacles*, or *St. Anthony's girdle*: they are described as several rocky pyramids between which it is exceedingly dangerous to pass; some rise to the surface of the water, and many others have 60 or 80 fathoms close to them. Between the Lincoln and Amphitrite shoals there are several dry sands and dangers very little known; and in general the whole interval between the west part of the Macclesfield bank and the Paracel is, according to the Portuguese pilots, a continued chain of rocks and sands, with deep water between them.

It is very useful to strike soundings on the Macclesfield shoal, to correct your reckoning, that from hence you may with more certainty shape your course toward that part of the coast of China you are bound to.

The necessity of sailing to windward of the intended port, obliges ships in this Monsoon to make the land to the westward; therefore those who are bound to Macao, must get sight of St. John's Island to the southward of Sanciam, or of Ou-cheou (Poolo Baby) in $22^{\circ} 37'$ latitude North; at the south-east end of St. John's, or even the Mandarin's Cap, which is still more westerly.

"The great advantage," says Captain *J. P. Larkins*, "of the passage from ST. JOHN'S ISLAND to Macao, is that there is not a danger but what is in sight, and its soundings are so regular, throughout the whole, that you may place the greater confidence in them; you may run, into 4 and $3\frac{1}{2}$ fathoms to the westward of St. John's and Sanciam, and along the north side of Sanciam, taking care to keep the north end of the same close on board, the channel being very narrow in that part; but you are more assisted by the tides there, than in any other part of the channel; you must however give a birth to the breakers, at the north-east point of Sanciam.

"You may pass with safety between any of the *Wizard Rocks*, (the Hen and Chickens) which lie off the South end of *Tykan*, carrying 7 fathoms.

"Any

" Any one who may fall to the westward late in the year, and wish to work up against the N. E. Monsoon, must attend to the following observations, viz. the chain of islands lying nearly E. N. E. and W. S. W. you must note that between the islands the ebb sets right out to the S. W. and abreast each island along shore. The flood also runs to the westward, but between each island there is an indraught setting to the N. W. and without, setting rather upon the islands, or about W. by S. by which means, with your larboard tacks on board, you keep the tide under your lee; and by standing in between the islands in 4 fathoms, which you may do with safety, you will be enabled to round the westmost point of each island, as near as you think proper, they being all steep to; which will prevent your being drove too far to the land. As at 3 or 4 miles off shore the swell is so great, that you will not be able to tack, and the disadvantage of veering twice or thrice in a tide is so considerable, that you will be a loser by your tide, so it is not advisable to go without 9 or 10 fathoms, which you will have about 3 miles off shore, and you may stand in within $\frac{1}{2}$ a mile, and have seldom less than 5 fathoms.

" If you make the land late in the season, let not your anxiety, from a want of the knowledge of the coast, carry you to leeward after Sampons, to get a pilot out of them, but stand right in, and anchor in 7 or 8 fathoms, where you cannot lie long without getting a pilot. At St. John's there is a good market, and great plenty of every refreshment, as well as a very convenient watering place."

Cou-Cock Island, to the eastward of Tykam Island, is called *Deer Island* by M. D'Après, and next beyond it, lies TYLOO Island, to which he gives the name of *Miroo*; when it bears N. W. or West, and W. $\frac{1}{2}$ N. you discover at its east point a white spot which has the shape of a *mizzen*; it changes that shape of a mizzen at all other bearings it can be seen, which are but very few, and this is occasioned by the intervention of a small island that lies off that spot. This island has a good watering place on the south-west end.

The soundings are mostly ooze hereabouts; from Poolo Babee the depth is from 21 to 17, 15 and 13 fathoms, and beyond Miroo towards Macao it is less.

In sailing towards Miroo you see to the eastward the LADRONE islands, which with those of LEMA form an archipelago extending to the North and the East. The southernmost of these, near the channel of Macao, is the GREAT LADRONE (Lobang), being larger than the others, with a high mountain round at the top, which in fair weather may be seen from the mast head at 14 leagues distance: very near it to the westward is the *Little Ladron*, another island of a middling size.

About 5 or 6 miles N. W. of this lies a smaller one, the farthest in the channel, and called *Potoe*, and PASSAGE, or *Middle Island*; it forms two small hillocks, and is encompassed with rocks above and under water, to which you must give a large birth; so that it is safer to keep mid-channel, or to come nearer the larboard islands, than those which are to be left on the starboard side; you range along the islands SAM-CHEOU, *Montanba*, as

well as *Kokoo* or *Cabo*, whose north-east end, called Point Cabareta, being doubled, you come to Macao, where you anchor in 5 or 6 fathoms, sand and ooze, the town bearing N. W. by W. distance $1\frac{1}{2}$ league, and the fortress on the hill N. W. 5° W. Ships that are to stay here, come nearer the shore; but the road indicated is sufficient for those who are bound to the river of Canton.

About 4 miles to the South of Macao lies the bay and road called *TYPA*, between the islands Kaho and Montanha, already mentioned, which bound it to the South, and those of Kaicoong, and Tee, by which it is inclosed on the North side; the soundings at the North entrance, in the middle of which lies a sunken rock, are from 6 to 4 fathoms, and from 3 to $2\frac{1}{2}$ in the bay, all taken at low water, spring tides, and for the most part, mud. It is high water, on full and change days, at 10 o'clock: the tides run about 2 miles an hour, when they are not influenced by extraordinary winds or rain; their rise and fall is about 6 feet in the springs.

As it is very material to know whether you are to the eastward or westward of the Great Ladrone, the following rules and marks are to be observed. When in $19^{\circ} 30'$ North, if you have above 55 fathoms, or in 20° above 50 fathoms, haul to the westward, so as not to have above 30 fathoms in 21° ; then keep in that depth, which will bring you in sight of the Great Ladrone. If you have more than 30 fathoms in 21° you may reckon yourself 3 leagues to the eastward for every 2 fathoms of increasing depth. In the latitude of 21° , and 30 leagues to the eastward of the Great Ladrone, you will have 50 fathoms, coarse sand and black specks.

In sight of land, to the westward of the Great Ladrone, you generally have muddy ground. The Great Ladrone may be seen in the latitude of $21^{\circ} 20'$, and no other land in sight; if it bears North you have then about 35 fathoms. If you have no soundings till you get into the latitude of $20^{\circ} 20'$, and then find from 45 to 50 fathoms, fine gray sand and ooze, the Great Ladrone will certainly bear between the North and N. by W. According to others, South from the Great Ladrone, in 40 or 45 fathoms, you will have black coarse sand, sometimes large stones, and nearer it white coarse sand and shells. But if you have no soundings, till you get to the northward of $20^{\circ} 20'$, you will find more than 50 fathoms, by which you may depend on being to the eastward of the Great Ladrone.

Being to the westward of the Great Ladrone, in $20^{\circ} 20'$ or $30'$ latitude, your first soundings will be from 90 to 70 fathoms, dark sand and ooze; then by standing to the northward, you will have 50, 40, 30, and 20 fathoms, sand—coarse sand and shells—sand and stones—and fine gray sand. As soon as you get into 18 fathoms, you will have soft mud, which continues to Bocca Tigris.

Another guide is the depth of water; the islands to the eastward being much steeper than those to the westward: again, all the islands to the eastward are high and uneven, having 16 or 17 fathoms water among them; whereas those to the westward are moderately

rately even, very high, large and long, making more like a coast than islands, and having but 7 or 8 fathoms.

When you fall in with them, push in boldly for them; and if you do not then know where you are, come to an anchor (for there is always good anchoring ground), and get a pilot; but if you are fearful, and lie off, the currents will drive you about, and other ill consequences may ensue.

The following rule, by Mr. *Nash*, is reckoned equally good as the preceding: when in the latitude of $21^{\circ} 30'$ North stand about 7 leagues to the northward, at which distance, if you shoal your water but 1 or 2 fathoms, you are then, undoubtedly, to the eastward, but if you shoal it 7 or 8 fathoms, you are to the westward.

When therefore you are convinced, by one of these methods, that you have fallen to the eastward of the great channel of Macao coast, the islands to the southward, as also of the Great Ladrone, which being doubled, steer N. W. to approach the Island Miroo; from whence you proceed, as it has been said already.

When the currents set you to the eastward, within sight of the Ladrone and Lema islands, you may know them from those on the west side by means of their latitude, because the south point of Great Ladrone is $30'$ more northerly than that of isle St. John, a difference which cannot escape any observer. Besides this, the size of the western islands (each of which appears more extensive than those to the eastward) and their different bearings, are more certain signs than the quality of the soundings.

The Lema islands extend about 30 miles to the eastward of the Great Ladrone; ships that are late in the season coming by the eastern passage, or the eastern part of the China Sea, always endeavour to come in by the Lema islands.

According to several reports, the different channels which are formed by the Ladrone and Lema islands are deeper, and not full of dangers as the passages between the western islands; yet it is not prudent to venture therein without a coasting pilot, which you will have come off to you on firing of guns. For want of this, the safest way will be to sail to the southward of them, even though the wind is contrary, since you may fetch the road of Macao by favour of the tides.

Whether you fall to the eastward or westward of these islands, the soundings will always shew their nearness, and you generally meet with them 16 or 18 leagues from the land.

SAILING DIRECTIONS FOR THE RIVER OF TIGRIS OR CANTON RIVER.

By Captain JOSEPH HUDDART, 1786.

"THE RIVER OF TIGRIS is by no means a difficult navigation, yet many ships of late years have got aground from the ignorance of the pilots who belong to Macao, and many of them know very little of the river; yet the Mandarins will not change them; they must take the ship (they brought up) down again; they say government has admitted them, and they must know the river.

"If between Macao road and the Bocca Tigris he comes into shoal water or gets you aground, it is said to be upon Lintin Bar, though I have not yet been able to find any such bar in the channel frequented by our ships: indeed I regret much that I had not a few days in the cutter between Macao and the Bocca Tigris, yet I can for the information of the mariner say, that though there is a great deal of shoal water, especially on the western side of the channel, yet there is undoubtedly a very fine channel.

"The best of the pilots in weighing from Macao road steer to the north-eastward, giving *Keeough* (a hummocky point on the western shore, bearing about N. by E. 3 or 4 leagues from the Nine Islands and nearly abreast of Lintin) a birth of about 5 miles. The lead is the best guide from Macao to the Bocca Tigris, taking the soundings from the western shore, and keeping in 4 or 5 fathoms, as it is high or low water; and being, as was said before, about 5 miles to the eastward of *Keeough*, and about 6 to the westward of Lintin, in from $4\frac{1}{2}$ to $5\frac{1}{2}$ fathoms, according to tide, direct your course about N. N. W. keeping in 4 to 5 fathoms, as above, and hauling to the northward as you shoalen, or to the westward as you deepen your water. If in the day-time, you will soon have sight of *Lankeet* right ahead, which keep about N. N. W. from you, or, in one with *Tycocktow*, till you are within 3 or 4 miles of *Lankeet*, which will take you up in the above soundings: the channel is deeper to the eastward, but it is safer, especially in the night-time, to borrow and take your soundings from the western shore, and not come into more than 5 fathoms low water, lest you cross the channel, and get entangled, as some of the pilots have done.

"Being from 3 to 6 miles below *Lankeet*, with bearings as above, steer more to the northward towards *Chuenpee*, so as to give *Sampanchow* from a half to a mile birth, leaving it on your larboard hand: this island is bold on the eastern side; I stood close in with it in the cutter, and had 5 fathoms, the channel from that to the eastward 3 miles wide. When abreast of *Sampanchow* haul more to the westward, steering about N. W.

by

by W. towards *Anunghoy*, giving the point *Chuenpee* a birth of $\frac{1}{2}$ of a mile, (this point is also bold close to the rocks) and you will have deepened your water to 9, 10, or 12 fathoms.

" In steering for *Anunghoy* (where there is a fort upon the point) keep in a fair way; the channel here is clear and shoalens gradually on each side.

" Being near *Anunghoy* keep mid-channel between that head and the rocks off the *Wantongs*, where you will find 23 fathoms water. The *Wantongs* are two islands situated near midway between *Anunghoy* and the western shore; on the principal or northernmost one there is a fort from which the Mandarin comes off to examine your ship, and whether you have a proper *Cbop* which the pilot is accountable for. This is called the *Bocca* or *Mouth of the TIGRIS*: and where the pilot, if calm weather, or the commander will permit him, engages 20, 30, or 50 sampans, or boats, at one dollar each, to attend and tow the ship if necessary on her passage up to *Whampoa*; he also engages some of those best acquainted with the river to proceed before, and lay upon the different shoals, who with a long bamboo keep soundings in about $2\frac{1}{2}$ or 3 fathoms upon that side of the shoal on which the ship is to pass: if he supposes the ship is coming too close, and the pilot has not taken proper notice of his soundings, he beckons with his hat, as was the case going down with the *Royal Admiral* in a calm with boats ahead, the pilot immediately ordered to put anchor, brought up with a bower, and did but just swing clear of the lower shoal of the first bar.

" Should it be night-time when you reach the *Bocca*, the ship must anchor below the fort, till day-light, for the Mandarin to examine the ship, and leave a man or officer on board to proceed with the ship to *Whampoa*.

" Having passed the fort of *Wangtung*, in a fair way between that and the north point of *Anunghoy*, you may continue on to the north-north westward till you bring the western point of *Lankeet* and the rock off the *Wantongs* in one, bearing S. 12° E. which keep in one steering about N. by W. to avoid the lower part of the bank *Tawlangsa*, till you bring the eastern part of the trees of *Lammee*, situated on the low grounds, in one with *Sesbetow* or Lesser Pagoda, bearing N. 36° W. You may then steer N. W. by N. $\frac{1}{2}$ W. for the Lesser Pagoda, keeping *Lammee* as above, till the Mount on *Tiger* island bears about S. W. when being abreast the height of the shoal *Tawlangsa*, you may haul more to the westward till the middle of the said trees are in one with the lesser Pagoda bearing N. 36° W. (to avoid the bank *Sawchee*, which you leave on your star-board hand), go not to the northward of this leading mark, till you have brought the hummocks on *Tycocktow* over the Gully in *Tiger* island bearing S. 14° E. which keep so till below the Second Bar, where the leading marks will bring you in a fair way. Ships lay here to complete their cargoes outwards, and may anchor any where between the two creeks from one to two cables length off the eastern shore.

" The general soundings of the SECOND BAR are about $3\frac{1}{2}$ fathoms at low water, it is but narrow, and rendered more difficult on account of two small Knowls, with each about 8 feet water less upon them than there is on each side; ships generally pass between them and the north-east shore. There is such a sameness in the Paddy grounds, that nature is deficient in providing proper objects to direct a stranger how safely to avoid them on a full tide, when nearly even with the Paddy grounds a ship at 18 feet water may go over them, but the pilots always lay sampans upon them, and which (or buoys) is the only safe mode in passing this bar for a ship of a great draft of water.

" From the Second Bar keep the north-east shore distant about $\frac{1}{4}$ of a mile, having recourse to your lead, (there being several knowls on the south-west side) till you bring the *Chop-house* on the south-west side, (being situated on the low grounds, close by the shore with some trees about it) to bear about West; then you will be nearly abreast of the south-east part of the island opposite, which leave on your starboard hand, and haul about half way over from the said island towards the south-west shore, to avoid the lower shoal of the FIRST BAR, which hath not more water upon it than 2 fathoms at low water. Upon this shoal *Whampoa Pagoda* is seen over the slack, within the hummock point of Danes Island bearing N. $72\frac{1}{2}$ W. The small hill to the northward of the east point of Danes island, being between the eastern dents of the larger mountain in the country, bearing N. 55° W. Consequently to avoid the shoal, the Whampoa Pagoda must be kept shut in behind Danes island, and the small hill must be brought to the northward of the easternmost dent, till the Chop-house is to the southward of the hummock, or bearing about S. $\frac{1}{2}$ W. when immediately haul to the northward towards the western point of the island which is bold; especially if the flood tide run strong; it sets to the westward, and may haul you upon the lower part of the reef that forms the south-west side of the bar, and extends considerably from some small islands to the south-eastward, all which you must leave on your larboard hand: on the lower part of this reef, the Chop-house in one with the lesser Pagoda bearing S. 12° E. you will have $2\frac{1}{2}$ fathoms at low water; therefore you should get to the northward of the point before you bring the Chop-house to the eastward of South, when you will be near the west part of the island opposite to it which is bold; and when you have got so far to the northward that the dents in the larger mountain before mentioned are over the hill above Danes island, bearing N. 57° W. you may keep those marks until abreast of the second Chop-house which is on the north shore; this will carry you clear to the southward of a Knowl; you may now keep in a fair way for Danes island which is bold, and may moor abreast of the upper part of ditto, and the lower part of WHAMPOA ISLAND.

" The variation of the Magnetick Needle, I have not been able to determine to my satisfaction; it varying above a degree in different parts of the river; whether from attraction on board the vessel (as I never took an azimuth on shore) or from attraction of mineral substances in the neighbourhood, I cannot pretend to say; having found both to have

have effect on the direction of the needle; but the mean of three observations was $0^{\circ} 25'$ East; yet I took an azimuth on board the *Effex* about 5 miles below Lankeet, and found by that azimuth compass $0^{\circ} 40'$ West variation. However it is certain the variation is small. The tides here are very irregular, which will always be the case in rivers, or inlets, situated near the Tropic, when the Moon has great declination.

"The time of high water, or rather the end of the stream of flood (for it is high water from 1 to 2 hours sooner by the shores), is at 1 o'clock $\frac{1}{2}$ near Lankeet island, at 2 o'clock near the Second Bar, and to the south-eastward of Whampoa island at 2 o'clock $\frac{1}{2}$, on full and change days: but when the Moon has great declination it may deviate an hour or more from this time; and you will have only one principal ebb and flood in 24 hours, which at the strength may run between 3 and 4 knots, and continue 7 hours; the other ebb and flood are weak, probably not one knot, and of short duration; but this irregularity is greatest when the Moon has highest declination in the quadratures, and arises from the same cause as effect the tides on Tonkin bar, mentioned by Mr. *Dalrymple* in the book delivered with his Charts, taken from the Philosophical Transactions, and too tedious to treat of in this place."

DIRECTIONS FOR SAILING TO CHINA, BY THE EASTERN PART OF THE CHINA SEA.

IF by any unforeseen accident your voyage is prolonged, or by a too late departure you are hindered from making Poolo Condore till the end of the westerly Monsoon, the course described in the preceding section will not be safe. The changeable winds and frequent calms, which usually precede the changes of the season, make it necessary to take the following precaution.

From within sight of Poolo Condore endeavour to make Poolo Sapata, as afore said; then steer N. E. as far as 13° of latitude, to avoid the rocks spoken of in the same section.

From this situation steer N. E. by E. to get sight of the north part of the island LUZON, or LUCONIA, as we have named it; upon approaching this island you must keep a good look out for the shoals which lie along the coast; you may perceive the breakers in the day-time, but in cloudy weather, or in the night, you run in danger of being lost. This accident may be prevented by getting to the northward in time, at least into latitude of 17° North, in order to get beyond the parallel of the shoals, and then sail toward the coast as far as within sight of Cape Boxeador, commonly called Cape Bojador.

The southernmost of these shoals, called *Mirabella*, lies in $14^{\circ} 24'$ latitude south, 14 or 15 leagues from the west coast of Luconia; to the northward of this, and about the

same distance from Luconia, lies the *Marfingola*,^{*} called by the English *South Marona*, in 15° latitude; and 20 leagues farther North is the south end of the *Bolinao*, or *North Marona*; this lies 21 leagues off the coast, and extends about 18 to the N. E. by N.

The SCARBOROUGH SHOAL lies, according to the Spaniards, about 66 leagues to the westward of Luconia; it extends above 20 miles from North to South, its southernmost end being in $15^{\circ} 5'$ latitude. On this shoal the ship *Scarborough*, Captain *D' Auvergne*, struck, September 12, 1784.

"At day-light," says the captain, "the rocks appeared frightful, though it pleased God the ship was on the sea side of the shoal, which is at least 2 leagues over and 8 long. On the east side of the shoal the rocks are almost as high as those of Scilly, and a terrible sea breaks over them: on the west side they are no bigger than a boat. They seemed to lie about N. N. W. and S. S. E. I think the *Scarborough* was near the north end of them, seeing the water blue to the northward of them, and rocks were seen S. E. by S. 3 leagues from the ship."

"That my misfortune may be a warning to others who have the honour to navigate the honourable Company's ships in these seas, and intend to go on the coast of Luconia, at the latter end of the S. W. Monsoon, in order to save their passage to Canton which is the safest way; I advise them not to come to the northward of latitude $14^{\circ} 14'$ North, before they are sure of being within the shoal; but if they do not intend to go on the coast of Luconia, then I advise them not to make more than $5^{\circ} 30'$ East meridian distance from Poolo Sapata."

On this shoal there are three small rocks above water, resembling, at a little distance, *Negroes beads*; the *Scarborough* went close to one of them, and near the three. Note that Captain *D' Auvergne* in his account has confounded this shoal with the *Marfingola* or *South Marona*.

When you approach the coast of Luconia you must not expect to find soundings here as in most other places, whereby to know the nearness of the coast; its steepness prevents your getting ground, even at a small distance from the shore; but the land is high, and may easily be seen 12 leagues at sea.

From within sight of Cape Bojador, in latitude $18^{\circ} 42'$, you shape your course towards the coast of China; and herein you must be very careful to avoid the Praters.

In order to describe the relative situation of the Praters and the coast of Luconia, we shall have recourse to the account given by a learned navigator, Mr. *George Robertson*, who went that passage in the ship *General Cooté*, October 1788; it will shew likewise the most eligible track to take at that time of the year, with the great risk there is of falling to leeward, after leaving Luconia for the Coast of China.

POINT CAPONES, the first land made on the coast of Luconia, lies in about $15^{\circ} 27'$; from this point northward there appears another termination or point, and between the

* The Scarborough shoal lies about 8° East of Poolo Sapata.

two the land is remarkably high, and shews like a saddle, which may be seen 26 or 27 leagues, in clear weather. To the northward of that point the land trenches away, and forms a deep bay, on the north-west part of which there is a prodigious high mountain, which can be descried at 30 leagues distance in a clear day. The coast hereabouts is steep to, and bold, with much of what is called gulf-weed. There are 2 or 3 small islands lying about 4 miles off point Capones; between them and the coast you have 40 and 35 fathoms; there are likewise soundings all along from Mirabella island to the northward of Capones, when within 2 or 3 leagues of the shore.

The coast of Luconia from Point Capones to CAPE BOLINAO, 29 leagues farther North, lies nearly upon a meridian; the land gradually gets lower from the high mountain to the cape, which is of moderate height. To the southward, there are several small islands, and northward of it the land trenches to the eastward, forming a deep bay, in the bottom of which appears again a very high hill, which may be seen very far off.

October 9th, departure was taken from Cape Bolinao, and 3 days after being, by chronometer, nearly in the stream of the Praters shoal, and at midnight within a few miles of its latitude, wore and stood to the southward till 4 A. M. wore again, and stood close hauled to the N. N. E. till day-light, when we saw the shoal right ahead bearing from N. by E. to N. W. by N. distant 7 or 8 miles. The force of the current in these 3 days had been 80 miles to the westward; "So that late in the season the greatest attention is required in stretching off from Luconia, especially when ships are obliged to leave it as we were from Cape Bolinao. I would therefore advise not to leave the coast till in latitude 18° North, if that parallel can be gained. The *Louisa* left the coast in $17^{\circ} 30'$, and passed the north-east point of the Praters rocks about half a cable's length; she put in stays, and fortunately came about, otherwise would infallibly have been lost, from the great error of her reckoning."

THE PRATAS, or the PRATERS SHOAL, as the English call them, stand according to Mr. *Robertson*, between the latitude of $20^{\circ} 38'$ and $20^{\circ} 52'$ North, extending East and West about 15 miles, from longitude $116^{\circ} 39'$ to $116^{\circ} 52'$ East of London. On the north-west part, about 3 miles from the edge, there is a low island in latitude $20^{\circ} 47'$; it is pretty large, full of low shrubs, and can be seen about 10 or 11 miles from an indian's poop. The breakers, if they are always as they appeared when this gentleman saw them, may be descried at 7 or 8 miles, and from the mast-head at nearly 10 miles. The south part of the shoal lies W. N. W. and S. S. E. in an even line, and is a continued range of breakers, which are steep to the very edge. The western side runs N. N. W. and S. S. E. it did not break when the *General Coote* saw it. The north and east parts seemed to form a right angle. "I did not see them break on any part," concludes Mr. *Robertson*, "nor was there any broken water in the center of the reef; it appeared much discoloured, and looked as if it was tolerably deep water. From the *Resolution's* account, who made the north-east part, they heard the breakers before they saw

saw them; so that I imagine, at times, all the sides of it break, according to the direction of the wind."

The PRATAS SHOAL, according to M. D'Après, is situated 86 or 87 leagues N. W. by W. of CAPE BOJADORE, and stretches 6 leagues from East to West; at the north-west part of it lies a small island about $1\frac{1}{2}$ league in length from N. E. to S. W. the whole of this shoal is dangerous by the rocks scattered within: they reckon its breadth to be 4 leagues North and South, in the eastern part, and only 2 on the west side; the anchoring place is to the N. E. of the islet whose latitude is $20^{\circ} 55'$. The bank is steep to on all sides, except to the North and N. W. where you get soundings at a league distance.

This shoal is so much the more dangerous, as you do not perceive the island in coming from the southward, or from the eastward; you only distinguish the rocks 2 or 3 leagues off, so that to avoid them, you must, in sailing from Cape Bojador, steer N. W. by N. till in the latitude of $21^{\circ} 30'$ North, then steer W. N. W. to make the Coast of China, which you may range till within sight of PEDRA BRANCA, situate in $22^{\circ} 6'$ latitude *, and about 6 leagues from the main. This rock is easily known by its whiteness; it is safe and steep to on all sides: you may pass between it and the Coast of China; the least depth is 15 fathoms. From hence steering W. by S. you presently see on the same point, the Lema Islands, 30 miles to the eastward of the Great Ladrone.

The easternmost of the Lema islands is a long island, the largest of all, and known by the name of *Great Lema*; it is pretty high land; it lies in latitude about 22° North, and between 45 and 50 leagues W. by S. $\frac{1}{2}$ S. from Pedra Branca; two others lie to the south-westward of it, and next to these is the island called by us the *Asses Ears*; the next makes like a circle or round hill, with a crack or notch in the middle, and is long to the westward. There is also four small islands and a large rock which makes with two spires, not very high. Near the Asses ears are the *White rocks*, which may be seen 5 leagues off: but they make the passage there very narrow, having many dangers under water, and bad anchoring. About 16 miles to the westward of the Asses Ears lies the Great Ladrone heretofore described.

Whenever ships fall in here, the best way is to get between the islands as fast as possible: and it is a great chance but you soon get a pilot: there is no danger, in going between the islands, but what is visible. Anchoring without the islands may prove difficult, there being strong currents which set to the eastward; and if you get between them, near the Asses Ears, or to the eastward, it is better than to stand out to sea again, for the current is not near so strong among the islands as without. When you come within the islands, you will find a great many more, and see the Peak of Lantoe N. E. of you. Those who do not choose this may coast the islands on the south side, as far as the Great Ladrone, and conform to the directions given before, to reach Macao.

* $22^{\circ} 20'$ according to Mr. Robertson, who places it in $115^{\circ} 13'$ longitude East of London, from Captain William Frazer's observations.

DIRECTIONS FOR SAILING FROM POOLO TIMON TO SIAM IN THE WESTERN MONSOON.

By Monf. D'APRÈS.

THE situation of the places, and the winds which blow from S. W. to West through the Gulf of Siam, at this season, prove the necessity of keeping along the western coast, in order to save your passage, or at least to render it less tedious or hazardous: therefore, if you sail without Poolo Timon, you must from its north point steer N. N. W. to make the Coast of Malaya, and then range along shore, in what depth you please; for it is every where safe, the land high, and bordered with a sandy beach.

POOLO VARELLA bears N. W. 9 leagues from the north point of Poolo Timon; it is properly a large rock; but in passing to the eastward, take care of a rock under water, about 5 miles N. E. by N. off this island.

If you continue the before-mentioned course, you will see POOLO BRALA, called by the Portuguese *Poolo Capas do mar*, in latitude $4^{\circ} 57'$ North, 7 leagues from the Malaya coast, and 39 leagues N. N. W. $\frac{1}{2}$ N. of Poolo Timon: this island is high, and may be seen 10 or 12 leagues. You may pass on either side of it in 20 or 25 fathoms; if you go without all, you must take care of a reef, which stretches about $\frac{1}{2}$ a league from its north point; this is the only danger about it.

THE RIDANG ISLANDS lie N. W. by N. of Poolo Capas, from which the south-easternmost is about 10 leagues distant. They are high, and many of them extend about 16 leagues N. W. and S. E. along the coast; and though they form a channel on that side, the best way is to pass without all, at $\frac{1}{2}$ league distance in 25 or 30 fathoms.

To sail between these islands and the main land, as soon as you have doubled Poolo Brala, you will see, along the coast, a long barren island in latitude $5^{\circ} 15'$ North, which is called POOLO CAPAS DA TERRA; you sail along the east coast thereof, and thence through a very small channel between the two south-westernmost islands of this cluster; the island to the N. E. is high and round with several sandy bays. In this narrow passage you have 9, 10, 11, and 14 fathoms water. The following extract of a journal will better inform you of the necessary precautions for passing between these islands.

"The 21st of June we were abreast of a long barren island, in latitude $5^{\circ} 15'$ North. The Charts lay down a bank along this coast; nothing of it, nor any sign thereof were seen; we had soundings from 22 to 18 fathoms. About 8 P. M. we passed between the two south-westernmost islands of Ridang in 9, 10, 11, and 14 fathoms, steering N. W.

by N. They are about two cables length apart. From hence stood N. N. W. and sometimes North, leaving on the right hand the other islands, where the depth is found between 14 and 25 fathoms, from that on the starboard, to another long one which lies on the larboard, and having 22 fathoms close to it. To the N. W. of this island there are two larger islands, and north-westward of these 3 or 4 islets, among which is one much higher than the rest, and making like a sugar-loaf: that nearest to the continent is rocky, and rugged to the northward; the north-westernmost has a rocky point projecting $\frac{1}{2}$ of a league.

"In this Cluster or Archipelago are reckoned 13 or 14 islands, and among them *Poolo Ridang*, which is large and high. The northernmost of the other two, between which we passed, is high, round, and has some strands of sand. There are 9 or 10 other islands to the north-westward, 5 or 6 leagues from *Poolo Ridang*, 3 of which are large, and 4 small. Coming from the southward you leave them on the larboard to prevent entangling yourself between them and the continent, as there are some dangers which may be seen off these islands. Half a league beyond these is the low land of Malaya.

"The 23d at noon, observed in latitude $6^{\circ} 10'$ North. This coast trenches S. E. and N. W. a little southerly: northward it is low, and forms little bays: the depth, from these isles to within about 2 leagues of the land is from 18 to 15, and 10 fathoms. At night you have land-breezes, and in the day-time the squalls are pretty strong.

"The 24th at noon, the latitude observed was $6^{\circ} 36'$ North. Hence we first saw the land about CAPE PATANY. All this coast is low near the sea side, but inland are high mountains winding with the shore, which is very full of bays. You have here 20 and 24 fathoms, mud." Thus far the journal.

If you sail without the Ridang islands, after passing the latitude of the northernmost, haul in for the main land, which from latitude $6^{\circ} 30'$ North to Cape Patany, in latitude $7^{\circ} 4'$ North, as appears from the extract above mentioned, forms several bays, is low toward the shore, and hilly in the country.

Above 14 leagues off Cape Patany lies *Poolo Lozin*. The winds in the western Monsoon require you to keep in sight the Malaya coast rather than this last. Beyond Cape Patany the coast makes a great bay very shallow, off which it generally blows very fresh.

When you are about 4 or 5 leagues to the westward of Cape Patany, shape your course for the island TANTALAM, which you may coast in 12 or 14 fathoms; the north point of this island forms the east side of *Ligor Bay*.

POOLO CARA, or the islands of Cara, being 3 in number, lie North and South, in latitude $8^{\circ} 30'$ North, about $7\frac{1}{2}$ leagues to the eastward of the north point of Tantalum island. The northernmost, and largest, has on the south-west side a sandy bay, in which, it is said, may be found fresh water running into it from the top of the island. The southernmost is only a large rock, which appears white, coming from the southward.

On

On the same side, about 2 cables length from its extremity, there is a flat rock, near the water's edge.

The passage between these islands and the main is very good, having from 14 to 18 fathoms, 2 or 3 miles off shore. After you have passed them, steer N. N. W. toward Poolo Carnom, (distant from hence 32 leagues on this point of the compass) in soundings of 20 and 18 fathoms. Before you get the length of Poolo Carnom you will see, to the westward, near the coast, a considerable group of islands and rocks called LARCHIN ISLANDS; and to the eastward of these an high land named by some *Point Lermont*.

POOLO CARNOM at first sight seems to form two islands, by means of a mountain separated by a valley, which is not perceptible above 4 or 5 leagues distance. This island may be coasted as near as you please, having no less than 10 or 12 fathoms a league off shore.

To the N. W. by N. are two islands of about the same height as Poolo Carnom; the first, called SANCORY, is 7 leagues from Carnom; the other near the Continent, named BARDA, or *Bardia*, is $7\frac{1}{2}$ leagues from Sancory. You need not go near them, but from Poolo Carnom steer North toward *Cin Point* bearing about N. $\frac{1}{2}$ E. 40 leagues; this may be seen at a great distance by means of the mountains of Pensels, which are quite close to it. Just at the pitch of this point are two little islands, and the coast beyond it lies mostly N. N. E. and S. S. W. with good soundings in the offing. You may sail along it without fear, till you come to the road of *Pepery*, to the southward of which is a bank which projects about 4 leagues into the sea; and it is necessary to keep the lead going, especially if you are near it. If you do not stop here, after you are past the bank, you steer N. E. by E. and E. N. E. 7 leagues to anchor before SIAM BAR, making proper allowance for the tides.

The islands, which form the different mouths of the Menam or river of Siam, are so low that they can scarcely be seen 3 leagues off: the principal passage is known only by the coast's beginning there to rise a little higher, and being more woody. The anchorage is to the southward, in what depth you please.

The city of JUTHIA, capital of the kingdom of Siam, is situated in an island formed by this river, 16 leagues to the northward of its mouth.

Twenty-two leagues S. by E. from Siam bar may be seen *Cape Liant*, which bounds on the east side that part of the bay which the sailors call the GULF OF SIAM. To the northward of this cape are several islands of different sizes, and many other lesser ones to the southward and westward. It is affirmed they are safe, and may be coasted without danger.

DIRECTIONS FOR RETURNING FROM SIAM TO POOLO TIMON,
IN THE EASTERN MONSOON.

TO sail from Siam to India, or any other part to the westward, you must wait for the easterly Monsoon, as the only season in which you can undertake this passage.

The winds begin to vary in the month of September; and in October the Monsoon generally breaks up with violent storms from the S. W. quarter, which renders the navigation of these narrow seas rather dangerous; but in November the weather is fair and settled; then the navigation is become safe and easy for such voyages as are usually undertaken at this season. The currents set with the N. E. Monsoon on the west side of this gulf; and the reverse during the S. W. Monsoon.

When you sail from the road of the bar, shape your course to round Cape Liant and the islands that surround it; then steer S. E. by E. to make *Poolo Way* in latitude $9^{\circ} 35'$ North. You may approach them, as they are very high and safe without.

Between Cape Liant and these islands the soundings are mud, from 45 to 35 fathoms just in sight of them. If in their latitude you do not see them, and find the depth from 50 to 45 fathoms, it is a sign that the currents have set you to the westward, as it generally happens in this Monsoon; then you must luff up, and endeavour to see *Poolo Panjang*, of which it is necessary to get a sight, although you have seen *Poolo Way*; then bear away: you have 35 fathoms, mud, 5 leagues to the westward. This island is high, and encompassed with several little islands; it is proper to bring it to bear North, before you begin to bear away; then you must steer S. by E. for *Poolo Timon*.

It sometimes happens, that, in crossing the gulf, one falls in with the Malaya Coast sooner than expected; therefore look out in time. Some navigators give, as a sign of your approaching it, soundings of coarse sand, whereas afar off they are mud, but this token is very uncertain. The latitude of *Poolo Capas* once passed, all the Malaya coast is safe, and the decrease of the depth is a sufficient caution to prevent your running ashore there in the night time.

If on the contrary, you are in less than latitude 5° North, and have 45 fathoms, it will then be necessary to stand in with the land, to get into less water; then you will not fail to make *Poolo Timon*, and thence *Poolo Aore*, from whence you sail towards the straits of Malacca, and, if you intend to pass that way, you conform to the preceding instructions.

DIRECTIONS FOR SAILING IN THE WESTERN MONSOON
FROM SIAM TO CHINA, TO THE WESTWARD OF THE PARACEL.

By M. D'APRÈS, with some Additions, &c.

1° ALONG THE COAST OF CAMBOJA—ISLANDS OFF THE COAST OF TSIOMPA.

SAILING from Siam Bar in the months of June, July, and August, you stand toward the west coast of the gulf, and keep along it as far as Cin point; from thence steer S. E. till in the latitude of Poolo Panjang; then East, to get a sight of it. This last course is not always necessary, as the currents, which run to the eastward, often set you in sight of Poolo Way and Poolo Panjang sooner than you are aware of; therefore proper precautions must be used. You have 30 fathoms just within sight of the latter island, which decrease as you come near it; but observe that this depth is likewise found in many other parts of the gulf, out of the sight of land.

As soon as you have passed Poolo Panjang, the course is S. E. by E. 23 or 24 leagues to Poolo Ooby, situate exactly at the eastern extremity of the Gulf of Siam, in $8^{\circ} 34'$ North. Its height renders it perceptible at a great distance, and it is overspread with various mountains making like saddles. Coming from the westward or S. W. these mountains bearing N. E. appear separate; the southernmost much higher than the rest, and the northernmost being the lowest; but when Poolo Ooby bears North they are in one. You may get fresh water on the north side of this island, though the best anchorage is on the east side, opposite a little bay, the islet off the south-east point bearing South.

Between Poolo Panjang and Poolo Ooby you have 25, 20, 18 and 16 fathoms, and as you get this latter depth you are near Poolo Ooby. Coming from the westward, when you have 28 or 25 fathoms, you are a good way from it.

Vessels bound from Batavia, Bantam, or Malacca, to Camboja river, as well as from Siam, should make Poolo Ooby, that they may be far enough to windward to take advantage of the S. W. winds, which blow very strong in the months above mentioned; then the currents also set swiftly to the eastward, so that, if you fall to leeward, it will be exceedingly difficult to regain the coast.

They reckon 40 leagues E. $\frac{1}{2}$ N. from Poolo Condore, heretofore described, to Poolo Ooby.

If you are bound to *Camboja River*, after doubling *Poolo Ooby*, in 15 or 16 fathoms, stand to the northward, to make the main-land, and when the southernmost point of it, which is low and covered with large trees, bears N. W. then steer E. by N. and E. N. E. keeping in the depth of 8 or 10 fathoms, mud. About 5 leagues off shore, there is a bank of hard sand, with no less than 3 fathoms: however this need not hinder you from continuing your course to the northward (but allowing it a birth, in large ships especially, as you soon after meet with better soundings, in 5 or 6 fathoms,) and you may approach the land as near as 4 fathoms, till opposite a river whose banks are planted with trees higher than those of the other parts of the coast. This river bears W. S. W. 22 or 23 leagues from that of *Camboja*.

Steering N. N. E. from it in the aforesaid depth, you will see the mouth of another river, from whence the coast extends eastward as far as that of *Camboja*. This coast is very low, and without any particular mark; therefore you must keep near it, to observe its bearing, and as soon as you find it to vary from East, you may be sure you are off

CAMBOJA RIVER, at the entrance of which you have 5 fathoms. Then you may perceive two points as well as an islet in the middle of the channel, and before its mouth two banks which, with the islet, form a triple passage: the western one is called *Basack* or *Cassaba River*; the second, between the two banks, has 14 or 15 feet water, hard sand; and the third, or eastern passage, has 18 feet in the height of the springs. To go between the two banks, you steer North, and N. by W. in order to keep the west point on board, near which there are 34 and 36 fathoms, and you will descry two little islands, which must be left on the starboard, to coast the western shore, for the space of 48 leagues. Thirty leagues above its mouth, the river divides into two branches: one of which is a narrow channel, called *Mouffique Channel*, which you leave on the larboard, and sail through that on the starboard, keeping always on the west side, till you come before the town. The ships which sail up this river, must be well provided with cables, anchors, and hawfers, because they must warp above 50 leagues of the way.—“These are the directions I find in several memoirs concerning *Camboja river*; but to enter it with safety, a pilot well acquainted is absolutely necessary, on account of the annual shiftings of the banks in this river.”

Camboja River has many other mouths to the northward: beyond that above described, the coast extends rounding to the N. E. as far as a narrow entrance called the *Eastern Channel*; then it trenches N. by W. as far as the *Japanese Channel*, off which lies a little island called *Crab Island*.

N. N. E. of *Crab island* in $10^{\circ} 35'$ North latitude is situated *Cape St. James*, or *Sinkel-Jacques*, a high broken land, seen 10 or 11 leagues at sea, and which, notwithstanding some rocks or islets near it, may be coasted as close as you choose, in 5 or 6 fathoms. The coast beyond it is low, stretching N. E. by E. and forms several
sandy

sandy coves, with two points, on which are some downs of sand; the land here making in hillocks. — To the northward of the second sandy point, there is a great bay, on the east side of which lies a small islet, of a moderate height, called *Cow Island*.

Three leagues off this coast, in $10^{\circ} 50'$ latitude North, lies a dangerous shoal upon which *Matthew de Britto*, a Portuguese captain, was shipwrecked: it may be seen $\frac{1}{2}$ league off, in 14 fathoms, gravel and shells. To avoid this danger, you must come no nearer the land than 4 leagues, opposite 3 little white hills by the sea-side. The mark for the shoal is a single mountain, highest at the east end, and much lower at the west end, which has a peak, at the foot of which appears Cow island, like a small round hillock; when the highest part of this mountain and the hillock are in one, bearing N. by W. BRITTO REEF is in the same direction. Moreover to avoid this danger with greater certainty, you must keep in 16 or 17 fathoms, which will carry you far enough without it.

Ships not bound to Camboja River, but only to Tonkin or China, are not obliged to make Poolo Ooby, nor to approach the coast about the mouths of that river; it is sufficient that they should get a sight of Poolo Condore, and thence, whether passing on the west or east side, they stand for Cape St. James, and sail along the coast of Tsiompa.

From Poolo Condore, towards this coast, you have soundings in 20, 25, 16, and 15 fathoms.

About 23 leagues N. E. of Poolo Condore, and 12 leagues from Crab island, you meet with a bank of 13 fathoms water, discovered by a Dutch sloop.

Seven leagues N. E. by E. of Britto Reef you see *Tiger Island*, or, as it is called by the Dutch, *Steen Clippen*, which lies very near a great sandy point on the COAST OF TSIOMPA. Coming from the northward, this point makes like an island upon which are several white spots; but Tiger island being barren and rocky, makes it easily distinguished from any other point. The channel between them is not navigable, on account of the sand banks and rocks with which it is obstructed: these rocks rising like pillars and columns, yield a strong representation of a city in ruins, with a square steeple in the middle of it.

The coast between Cow and Tiger islands forms a great bay or bight, into which several rivers have their openings.

Forty-seven leagues S. E. of Tiger island, in $10^{\circ} 32'$ North latitude, lies POOLO CECIR, surnamed DO MAR, or of the sea, to distinguish it from the other Cecir near the shore, named from its situation *Poolo Cecir da terra*. Cecir do mar lies N. E. and S. W. about 2 leagues in length; the land is dry and barren, of a yellowish colour, the middle rising in a mountain, to the southward of which are several hillocks. About $\frac{1}{2}$ of a league from the north-west point there is a large rock, and within gun shot of the north-east

north-east point a little islet whose soil is reddish. It is encompassed with rocks above and under water; and a sand-bank reaches from these rocks to the island.

Half-way between Tiger Island and Poolo Cecir do mar lies the Bank of the *Court of Holland*, whose shoalest part, according to report, has but 4 fathoms water. "In returning from China, I anchored close to it in 25 fathoms, small stones; from thence, having seen Poolo Cecir do mar, I found that the north part of it bears N. N. W. of this island." Ships from the northward or southward may avoid this bank by sailing along Poolo Cecir do mar, at 2 leagues distance, in a fine channel like that between this bank and the Coast of Tsiompa, where you find 23 or 24 fathoms, sand mixed with small stones.

E. N. E. of Poolo Cecir do mar, distance 17 leagues, there is an island, with two lesser ones, which some navigators call the *Three Brothers*. The largest is of a middling height, and a reef stretches off from its south point, 15 leagues N. E. From this island, in $11^{\circ} 10'$ North, lies a small island, a little higher; all the old charts draw from one to the other a dotted line to represent the ridge of a bank, which seems to indicate that the bottom between these islands is dangerous: the Portuguese call this bank *Rabo de Lacaio*, or *Scorpion's tail*.

Ten leagues South of the Three Brothers, lies Poolo Sapata, which has been heretofore described.

2° ALONG THE COASTS OF TSIOMPA AND COCHINCHINA.

POOLO CECIR DA TERRA, mentioned in the preceding article, lies 8 leagues E. N. E. from Tiger island, and about 5 miles off the high Cape Cecir: it is low barren land, and surrounded with rocks both above and under water.

Between Poolo Cecir da terra and Tiger island there is a large bay extending N. N. E. about $4\frac{1}{2}$ leagues, as far as Boden river, and which would be a good place for refreshments, if the people were of a more sociable disposition. At the south-west point of this bay, there is fresh water, about 5 miles to the northward of Sandy point. When *Cecir Bay* bears W. by N. $\frac{1}{2}$ N. 6 or 7 leagues, you may see to the northward two or three little hills, like sugar loaves, and on the south side a long ledge of sand which borders, as it were, the whole coast; these marks make the bay easily known from the others.

Near Cape Cecir there is a dangerous reef called *Breda Shoal*, projecting out from Poolo Cecir da terra; to avoid it you must pass 3 leagues without the island, for nearer the water shoals, and the bottom grows foul.

Between the bank of the Court of Holland, and that of Matthew Britto, you have 20 and 22 fathoms at $4\frac{1}{2}$ leagues off shore. If thence you steer N. E. and N. E. by N.

you find but 15 and 12 fathoms, sand mixed with small stones; and then Tiger island bears N. W. If the course be continued, the depth increases again to 18 fathoms off Cecir Bay, and gradually to 24, about 3 leagues off Poolo Cecir da terra, sometimes sand, and sometimes stony soundings.

If you sail $1\frac{1}{2}$ league off shore, within the bank of Matthew Britto, you have 9 and 10 fathoms as far as Tiger island, and from thence to Poolo Cecir da terra it deepens presently from 10 to 14 and 15 fathoms, when it shoals again, if you continue to sail along shore, 10, 9 and 8, and within Cecir Bay to 6 fathoms.

PADARAN BAY lies in $11^{\circ} 25'$ or $27'$ North latitude, about 10 or 11 leagues to the north-eastward of Poolo Cecir da terra; and farther on, in $11^{\circ} 52'$ is the *Falſe Cape*, VARELLA, commonly AVARELLA, where the COAST OF COCHINCHINA begins; it is high, with a rock at the top of it, like a centry box. The Portuguese give it this name *Falſe*, to distinguish it from another to the northward, very much like it. Close by the high land you perceive a long sandy valley.

Between Padaran Bay and Falſe Varella there is a bay extending N. by W. whose bottom is exceedingly foul; and at its mouth you meet with an island equally encompassed with dangers.

The entrance of COMORIN BAY is to the northward of the Falſe Cape Varella, and extends N. W. by W. Going in you find 40, 35 and 30 fathoms: the north-west side is very rocky and full of shoals; and the adjacent lands appear double, with many points and bays.

About 9 leagues from Falſe Cape Varella lies the South point of WESSEN'S BAY; it is known by whitish spots upon the land to the southward of it, as also by several islands near it. Among the most remarkable is *Fisher's Island*, which lies near the north point of the bay, and seems very barren. Near this bay you perceive to the westward, a hill, which in clear weather resembles Cape Varella, but it lies more southerly, and generally is obscured by the clouds.

PAGODA BAY lies a little to the North of Fisher's island, as well as *St. Philip* or *Sir John Phipp's Bay* and *Schuyten Bay*, which appear barren. Hereabouts the land is of a moderate height and steep, but in the country it is higher. Between this bay and Cape Varella you perceive on the shore several downs of white sand.

The TRUE CAPE AVARELLA is situated in the latitude of $13^{\circ} 7'$ or $8'$ (or rather $12^{\circ} 52'$) North, and is known by a high hill on whose top is a rock like a pyramid or tower, which may be seen at a great distance, either from the northward or the southward. Within this cape the coast forms a great bight, whose extent is not perceivable till you are past the cape; it is said that its bottom is good and safe in 15 fathoms, and that you may get fresh water there; but you must be greatly on your guard on account of the inhabitants, who are all treacherous and robbers.

Nine leagues to the northward of Cape Varella you meet with POOLO CAMBIR DA TERRA, a long and low island, about $1\frac{1}{2}$ league from the main, which is known by the variegated spots of its soil: to the southward of it is a rock on the top of which are 4 great stones standing upright, which seem to have been placed with great order and exactness. You may anchor in 12 fathoms, sand, between the main and the island, and take in fresh water out of a great river, which empties itself near Poolo Cambir. The coast hereabout trenches a little more to the westward.

Coming from the northward, as you approach Poolo Cambir, you will see a hill like that on Cape Avarella; but it is farther to the South, and different in this, that when it bears S. W. by S. $\frac{1}{2}$ W. you may perceive another little hillock to the northward of it.

E. N. E. 17 leagues off Poolo Cambir da terra, upon the edge of the Paracel, lies the small island called Poolo CAMBIR DO MAR.

Chinchen, or CHEMCHOU BAY, whose north point is situated in $13^{\circ} 40'$ North latitude, is very extensive: it is known by a great rock, which rises like a spire steeple out of the water, and by several hummocks a little to the northward. When you have the bay open, and it bears West, about 3 leagues distance, you may see there two rocks, the southernmost of which is divided into three, by which it is easily known.

To the northward of Chemcheu Bay you find the entrance of a large river, beyond which the coast extends N. N. W. and forms a bay full of islots and rocks. On the north side are several downs of sand, which may be descried a great way off.

POOLO CANTON is in the latitude of $15^{\circ} 15'$ * North, about 14 miles from the continent; it is about 3 leagues long, being high at each end and low in the middle, which makes it to be mistaken at a distance for two islands. From the south-east part there runs a reef, for a long cannon-shot, on which the sea breaks: many dangers surround that island, and the bottom is foul; therefore ships should not approach it too near. You may sail between the main, or *Cape Batangan* and Poolo Canton, in good soundings of 30 and 40 fathoms: to the southward of that cape are several rocks above and under water, but keeping in the above depths you have nothing to fear.

On Poolo Canton there is fresh water, but the difficulty is to land there; whereas on the continent opposite the island there is a spacious river, with 5 or 6 fathoms water: *Salan-buigh*, a town on its south point, may be seen 12 or 13 leagues. This coast and the parts adjacent are very populous.

Two leagues N. N. W. of Poolo Canton you see a small flat islot whose coast is very foul; you must not approach it, when you pass between these islands and the main.

N. W. by N. about 13 leagues along shore, in $15^{\circ} 54'$ North latitude ($16^{\circ} 25'$ in *M. D'Après*), lies the island of *Cham Collao*, which the Portuguese have named *Ciampelo*;

* *M. D'Après* makes it $15^{\circ} 40'$.

It is pretty large and high, extending N. N. W. and S. S. E. upon it are two lofty mountains, the southernmost of which is the highest, and a valley full of trees in the middle. You may get fresh water on the western coast, next the main land, whose shore is low and sandy, and from which this island is about $2\frac{1}{2}$ leagues distant; and can anchor in small bays very convenient for that purpose. At the north-west point of the island are 3 islets, one of which is very high, and at the south-east point is another smaller than the rest. Opposite Ciampelo you meet with a large and navigable river, on which stands the town of *Fajfo*, called by *Dampier*, *Quinam*.

South by East from Ciampelo about 3 leagues there is another middling island, called *Ciampelo Falso*, from the south-east end of which projects a reef.

Five leagues to the northward of the true Ciampelo lies *Cape Tooron* and the entrance of *TOORON BAY* about $1\frac{1}{2}$ broad, and in which you find 14 fathoms water. From *Cape Tooron* they reckon about 6 leagues W. by S. to the bottom of the Bay, where you have 10 fathoms. *Tooron* is the most trading port of that coast, and much frequented by the Chinese, Tonkinese, and other neighbouring nations.

About 33 or 34 leagues N. W. by N. from Ciampelo lies the bay of *Keboa* or *Sinboa*, a few leagues to the north of which ends the Coast of *Cochinchina*. Then begins the Coast of *Tonkin*.

3° ALONG THE COAST AND IN THE GULF OF TONKIN.

THE COAST OF TONKIN bounds, on the West and North, the Gulf or Bay of that name, which is as often reckoned from *Cape Choomay* or *Cape North*, about 8 leagues N. W. by W. of *Cape Tooron*.

This coast which was formerly much frequented, being now entirely relinquished by Europeans, Mr. *D'Après* owns that he could scarcely meet with any instructions for its navigation. Nothing can fill up this deficiency better than the following remarks extracted from that very celebrated seaman *William Dampier*.

THE GULF or BAY OF TONKIN is about 30 leagues broad, in its greatest breadth: near the extremity of the bay there is a great quantity of small islands, and its entrance seems to be shut by the *Paracel*. You may anchor there every where; in the middle, you have about 46 fathoms water, black ooze, and sand of a pepper colour; and on the west side the ground is oozy likewise, mixed with reddish sand.

In the bottom of the bay there are some islets very near the shore; two of them, more considerable than the rest, are the marks for the two chief rivers, or rather for the two branches of the principal river of *Tonkin*; one of these is called *Rokbo*, which falls into the sea in the north-west part of the bay, in about $20^{\circ} 6'$ latitude north: there is only

12 feet water in the channel at the entrance, very soft mud, and it is commonly used by the Chinese and Siamese.

About 1 league West from the mouth of that river, is a small island of a good height, called *Fishermen's Island*, which is a mark for the river; it lies about 2 miles from the shore, and round it you may safely anchor in 17 or 18 feet water.

The other branch or river is a great deal broader and deeper; this, *Dampier* calls *Domea*, from the first remarkable town on its banks: its opening into the sea is 20 leagues N. E. of Rokbo, in $20^{\circ} 45'$ latitude North. Between the two rivers there are many dangerous shoals, which project above 2 leagues. All this coast, from CochinChina to the West, as far as China, which lies to the East, is likewise bordered with shoals and reefs stretching irregularly into the sea.

The Europeans enter by this river on account of the depth of water; but there is a bar, about 2 miles wide, and the breadth of the passage is only $\frac{1}{2}$ mile. In some parts of the year there is not more than 15 or 16 feet water, at high tide, and at other times you will have 26 and 27 feet. They say the highest tides are during the North Monsoon in the months of November, December, and January, and the lowest in the months of May, June, and July, when the South Monsoon prevails †.

The bar is hard sand, which renders it dangerous; and by the shifting of that sand at every tide, various channels are continually formed that increase the danger; therefore a pilot is necessary to enter. You can get one (upon the first notice of firing a gun) at the little village of *Batsha*, which lies at the mouth of the river. In case you should be obliged to wait for a pilot, till high water, the mark of the river is a high mountain inland, called the *Elephant*; you steer towards it N. W. by W. sailing afterwards toward the shore, the depth decreases till you come into 6 fathoms water, and then you will be 2 or 3 miles from the entrance of the bar, and about the same distance from an islet called *Pearl Island*, which you keep the nearest you can to the N. N. E. with these marks, and in this depth you may anchor, and wait for a pilot.

When you have passed the bar, the depth increases, and the ground is oozy. The river is above a mile broad at its mouth, but becomes narrower as you go higher up; it is about 5 or 6 leagues up this river to the village of *Domea*, where the Dutch ships

* The Dutch have given the same name to another island, about 20 leagues to the southward of this.

† The entrance of this river *Domea*, as *Dampier* has named it, is what is called commonly the *Port of Tonkin*. "In the said port, there is but one flood and ebb in 24 hours; and twice each month, viz. (when the moon is near the Equinox) there is no tide at all, but the water is stagnant; but with the Moon's declination there begins a tide which is greater, when she is in the tropical signs; only with this difference, that when the Moon is to the northward of the Equinoctial, it flows, when she is above the earth, and ebbs when she is under it; so as to make high-water at Moon's setting, and low-water at Moon's rising: but, on the contrary, the Moon's being to the southward, makes high-water at rising, and low at setting; it ebbing all the time she is above the Horizon; as appears more at large, *Philos. Transact. Numb. 162.*"

See *BARLOW'S Survey of the Tide*, sect. 6. p. 169.

generally lie; but the trade is carried on at a place about 100 miles from the entrance, where it is difficult sailing up in a large ship.

The Coast of Tonkin is, more than any other part of the China Sea, subject to *Typhons*, which prevail in the months of July, August, and September; they happen generally at the change or full of the Moon, and are always preceded by clear and fair weather, with gentle and mild winds. These, contrary to the wind common at this season, which is S. W. turn to the North and N. E. Before the whirlwind comes there appears a huge cloud to N. E. which is very black near the Horizon, but of a deep reddish hue toward the upper part; a little higher it is more vivid, and thence to its extremities it is of a pale and whitish colour, which dazzles the eyes. This cloud is frightful to look at, and sometimes it is seen 12 hours before the whirlwind. When it begins to move on with rapidity, you may be sure that the wind will follow immediately. It rises impetuously, and blows with an amazing fury to the N. E. for 12 hours more or less. It is accompanied with frequent and awful lightnings, tremendous claps of thunder, and a violent deluge of rain: when the wind begins to abate, the rain ceases at the same time, and a calm succeeds. This lasts about an hour, then the wind turning to the S. W. nearly blows with as much force and as long from that quarter, as it did before from the N. E.

The months of November and December are extremely dry, hot, and wholesome. January, February, and March, are pretty dry, but then you have very thick fogs, and sometimes cold rains, in the morning; the air is also very cold during those three months, chiefly in January and February, and especially when the wind is N. E. or N. N. E. The month of April is considered as moderate, in every respect.—Let us now resume M. *D'Après's* description of the Gulf of Tonkin.

The west coast of the Island HAI-NAN bounds that gulf on the east side. This island is large, and the land very high; it extends about 50 leagues from S. W. to N. E. and is 30 in breadth. On the south and south-east sides are some ports said to be commodious; but it is advisable not to enter them, without one of the pilots of the place, who always offer their service to those ships which they see approach their coast.

The western part of Hai-nan which faces the Gulf of Tonkin, is encompassed with several banks; but you may easily discover their approach by a pretty regular decrease of the depth. If you keep the lead going, and do not come under 15 fathoms, you have nothing to fear. Upon this coast there is a high mountain, which may be seen 20 or 25 leagues at sea; when it bears East it appears craggy, and forms several points of different shapes and heights.

Ships bound to Tonkin being to the northward of Ciampelo Island above described, need not keep any farther along the west coast of Cochinchina; but from thence they are to steer N. W. having regard to the tides, lest they set them to the southward of Hai-nan, or on the banks off its west coast: in the first case, the sight of land,

and in the second, the soundings will enable you to prevent these inconveniences, by steering a different course from that just prescribed.

As soon as you are in the latitude of 19° North, and in 28 or 30 fathoms, if you have not seen the isle of Hay-nan, steer N. by W. to make the *North-east* or *Norway Islands*, the southernmost of which lies in $20^{\circ} 35'$ North latitude, 13 leagues * E. S. E. of the principal river of Tonkin; they are of a middling height. In this course you must likewise allow for the tides, which sometimes set down the gulf: if you be driven thither, and obliged to beat up again, you must not come nearer the bank, that lies off the coast, than 8 fathoms; and be careful of this likewise as you come nigh the river, to enter which you must proceed according to the directions above given.

You must sail from Tonkin river, at the beginning, or at least by the middle of November, when the northerly winds blow fresh; but at the end of this month, as they come from the East or E. S. E. they are against you, and you will be obliged to stay till the end of December, or beginning of January, before you can get out of the gulf, and then they blow from N. N. E. to East, being a continuation of the eastern Monsoon, when the currents run to the southward, from 30 to 60 miles in the 24 hours.

THE PASSAGE TO CHINA

BETWEEN THE ISLE OF HAI-NAN AND THE PARACEL.

THE PARACEL is a great rocky bank, extending, from North to South, off the Coast of Cochinchina, according to most charts 92 leagues in length from $12^{\circ} 10'$ to $16^{\circ} 45'$ north latitude, and 20 leagues more or less in breadth: it lies 45 leagues South of the Isle of Hay-nan, and we have been informed, within these few years, that this space is filled with several low islands of different sizes, some of them 7 or 8 leagues in length, and with sand-banks, reefs, and rocks, in many parts of it. There is a safe passage between the southernmost islands of the Paracel and the north-east island of the Scorpion's tail.

Instead of Tonkin, if you are bound to China, you must keep along the coast of Cochinchina, till you get sight of Ciampelo island, before you cross over to Hay-nan island: by this means you prevent the effects of the currents, which coming out of the Gulf of Tonkin set strong to the eastward during the western Monsoon. From within sight of these islands you steer N. E. by N. to make the south-east part of Hai-nan; you have soundings in 70 and 80 fathoms, 10 or 12 leagues off; and at 6 or 7 leagues, 50 or 60 fathoms. When you make this island, coming from the southward, you do not directly perceive any thing remarkable, except TINHOSA island, which is of a middling

* According to several Dutch navigators, the Norway islands lie 22 leagues East of Domea river.

size, and the largest among many others upon the coast; it has on its west part a steep hill, which on the east side slopes gradually to a point. They say that at the foot of the hill, on the west side, is a little bay. The latitude of this island is $18^{\circ} 45'$ North. When Tinhosa bears N. W. $\frac{1}{2}$ W. about 7 leagues, in 60 fathoms, you descry upon the isle of Hai-nan three very high mountains, the westernmost of which has on the top two hummocks, and the easternmost two others.

Three or four leagues North of Tinhosa lies a smaller island, near the coast of Hai-nan, called TINHOSA FALSA, whose north point makes like a quoin. The islands between them are neither near so large or so high. The inland parts are likewise very high, and when you perceive the east part of Hai-nan, bearing N. W. 7 or 8 leagues, it appears steep, mountainous, and cragged: among the rest there is a very high mountain, which terminates with a very remarkable round bluff, or, according to the *English Pilot*, with a gap on the top of it, which seems like an island. The north part of this island is not so high as the eastern.

From Tinhosa Falsa to the east point of Hai-nan, there are several large islands along the coast; as also between this and the true Tinhosa.

The islands called POOLA TAYA, to the number of 9 or 10, besides many rocks, are low and barren; the northernmost of them lies in $19^{\circ} 47'$ North and 11 or 12 leagues to the eastward of the northernmost part of Hai-nan, between which and these islands you may pass on occasion; but at present it will be sufficient to leave them 4 or 5 leagues to the westward.

About 15 leagues E. S. E. from Poolo Taya, is the *Banc du St. Esprit*, (*Holy Ghost Bank*) which extends about 10 leagues in length from N. W. by N. to S. E. by S. and 8 or 9 from North to South; the north edge is bordered with rocks even with the water's edge, and you have upon it 12, 10, 9, 8 fathoms water; and $5\frac{1}{2}$ on its southernmost tail.

From Poolo Taya to the Isles of SANCIAM and ST. JOHN'S, the course is N. N. E. $\frac{1}{2}$ E. about 45 leagues; you may easily know your approach to these islands by the soundings, which you find a good way off; and then you proceed according to the directions already prescribed, page 468.

Should you fall to the westward of Sanciam, and of the FALSE SANCIAM, which is next it on that side, there is a rock, which at first sight you will be apt to take for a sail; but at the distance of 3 leagues it has the appearance of a little pyramid, and is called the MANDARIN'S CAP. As soon as you get sight of it, stand to the East, going to the southward of the Two Sanciams, and Poolo Ou-Cheou: the extremities of the former lie about East and West of each other, and the latter N. E. by E. of the south point of the true Sanciam.

INSTRUCTIONS FOR SAILING FROM ST. JOHN'S ISLAND TO EMOUY OR AMOY, WITH THE DESCRIPTION OF THE COAST, &c.

By Monf. D'APRÈS.

WHEN you are in 30 fathoms to the south-eastward, and within sight of Sanciam and St. John's Islands, steer E. N. E. to get to the southward of the Great Ladrone island: in this track you will pass the Lema islands, which are not far to the eastward; and having passed them, continue the same course to get sight of PEDRA BRANCA, or the white stone, heretofore mentioned, p. 478. It lies about 21 leagues eastward of the Lema islands, and is safe all round, so that you may pass it by day or night without danger either within or without, as it suits you. The soundings to the southward are 25 and 30 fathoms, and to the northward, in the middle of the channel, 20 and 15 fathoms.

About 4 leagues North of Pedra Branca lies a point, to the northward of which lies *Harling's* (or *Haerlem's*) Bay, where is good anchorage: to enter it you must go without the island near the continent. There are also two rocks at going in, which you may pass on either side. The soundings are good all over the bay, where you may anchor in 10, 8, or 6 fathoms.

Opposite that bay, or as soon as you have entered it, you may see to the West southerly, $2\frac{1}{2}$ or 3 leagues distance, several islots near the shore, which are not perfectly known; also to the eastward is a bay or cove extending to northward, and frequented by the small Chinese junks.

Bear, or *Beyas Bay*, which the Chinese call *Ti-ol-zo*, lies N. N. W. of Pedra Branca, distant 10 leagues; it is full of rocks and islots, but there is no anchorage, unless it be under the west point of the bay, which affords shelter from the S. W. winds.

East North-east of Beyas lies *Brandons Bay*, in which you have good soundings from 4 to 7 fathoms. In coming from the S. S. E. or East, if you would enter this bay by the east point (where fresh water is to be had) you must sail close to it, and steer North, in soundings from 10 to 6 fathoms, greasy ground like ooze: you have but 4 fathoms, in passing by 2 islots, bearing W. by S. of the said point, and some other small islands near the shore. I would advise you not to go between the two islots, because there is foul ground; but to keep on the north side of the bay, where you have shelter from all winds.

To the eastward of the east point of Brandon's Bay, lies the *Bay of Cranmeis*, or *Cranmer*, in which are good roads, with 8 or 10 fathoms, and shelter from the northerly winds.

Pissoang,

Pissoang, or *Sbare Bay*, called likewise the *Great Bay*, lies to the East of the latter; its entrance is narrow, but of easy access; and within it affords shelter from the southerly winds, in 6 or 7 fathoms, good ground.

From *Cranmeis Bay* to the great bay, you may sail between the three islands which lie before the bay, that is to say, by leaving two islets to the starboard, and another larger one on the larboard: you may also pass safely between two other islets that lie before *Cranmeis bay*, and the eastern point of the said bay. If you would go without the island in the channel, between this point and *Pissoang*, you must steer E. by N. and East 4 miles; then North, till you are opposite *Pissoang*, which is 4 miles farther; but those who pass within the island, must take care of the rocks which border the coast.

About 2 leagues from *Pissoang*, or the great bay, lies *Groeningen Bay*, in which is a good shelter from the N. E. Monsoon, provided you are within the island that lies in the offing, near the east point of the bay: you must not come too near the east point, by reason of a reef projecting a good way out.

Having sailed 14 miles E. N. E. from *Groeningen Bay*, you come to *Reyorson* or *Reyensen Bay*, where you are sheltered from the northerly winds in 9, 8, 7, 6 and 5 fathoms, good ground. Going in you pass close to the island at the east point; minding your lead on account of the foul ground which surrounds it. There are several islands between *Groeningen Bay* and that of *Reyorson*, between which it is said the channel is navigable in good soundings, from 10 to 4 fathoms.

It is reckoned about 12 leagues E. N. E. from *Reyorson's Bay* to a point of land, with very remarkable sand-downs; the depth between them is from 8 to 12, 14 and 15 fathoms. To the south-westward of this point is a rock above water, and about a gun-shot from it several others which may be seen at half-tide.

Nassouwire or *Nassouwen Bay* lies between that of *Reyorson* and the sand-downs; as well as a little hill called the *Black Mount*.

It is nearly 5 leagues N. E. from the sand-downs to the south-west point of *Wiringer Bay*. These two points afford shelter from the northerly winds, in a sandy bay, in 10 or 12 fathoms: you may also anchor under shelter from the S. S. W. winds, behind an island; but as it is encompassed with foul ground you are not to come nearer than 9 fathoms: a little to the northward of this is *Tesoe* or the *Dry Bay*, under the north-east point of which you have good anchorage.

From *Wiringer Bay* to *Cape Phijo*, or the *Cape of Good Hope*, the course is N. E. and N. E. by E. $6\frac{1}{2}$ or 7 leagues. This cape is very high, and surrounded with low land. On the west side you perceive a great wide bay called *Ornefis* or *Orange Bay*, where you may anchor sheltered from the northerly winds, in 6 or 7 fathoms; also to the northward of the *Cape of Good Hope* is another shelter from the southerly winds, affording a
good

good road, in 5 or 6 fathoms, between two islets about 2 miles asunder, but surrounded with dangers.

As soon as you have the Cape of Good Hope bearing N. W. 4 or 5 leagues, the best course for going to Amoy will be to steer E. $\frac{1}{2}$ N. in order to pass without a little cluster of islands and rocks called the *Lamock islands*, bearing from the said Cape E. by N. 13 leagues, and situated in $23^{\circ} 8'$ North. These islands, which are very small and low, lie about 4 leagues S. S. E. from *Lamond Island* near the main. It is said that you may pass between this last and the others: but I think it more prudent, when not obliged to do it, to keep off them: it is even proper to be sure of being well to the eastward of them, before you stand to the North, especially in the night-time, for fear of running on them in the dark: and when you are without these islands, steer N. E. by N. or a little more northerly, if you find the current setting to the eastward; this will bring you in sight of *Chapel Island*, or *Pierced Island*, called also the *Hole in the Wall*; it lies in $24^{\circ} 10'$ North and S. S. W. from the mouth of Amoy harbour, and is easily known; when it bears E. N. E. and W. S. W. you may see through it. When it is bearing N. by W. 4 leagues, you perceive on the continent a remarkable round hill to the N. W. by N. and are at that time in 26 fathoms water. You sail then along Chapel island, keeping about 2 miles offing; and whether you leave it on the starboard or larboard, you have no less than 14 or 15 fathoms; from hence you steer N. N. W. for the bay. When Chapel island bears S. E. by S. the depth will decrease to 14 or 15 fathoms, but if more, haul a little to the northward, keeping in 11 or 12, which is the best channel.

When you are half-way from Chapel island, a long island is seen called the *Great Goeve*, in the entrance of the harbour, at each end of which is a rocky mountain, and in the middle a sandy bay. To the N. E. stands a pretty high rock, called the *Half-tide Rock*; and though you may pass between the Great Goeve, and this rock, it is much safer to leave both on the larboard: you have 16 fathoms $\frac{1}{2}$ league off it. From hence you see the channel open between the *Little Goeve* and 5 islands which lie to the north-eastward, and must keep mid-channel in soundings from 15 to 14 fathoms; the width between the Little Goeve and the north-east islet, which forms the passage, is about $\frac{1}{2}$ league.

As soon as you are through this channel, steer N. W. by N. for the south-west coast of *Amoy Island*, along which you sail, within $\frac{1}{2}$ mile by your soundings, which are very regular. The harbour lies to the north-westward, and is easily found by the junks, or small Chinese vessels which lie there: you may anchor therefore according to the size of your ship. The Chinese pilots generally come on board, even without the bay, as soon as they perceive any ships.

N. B. You must not enter the port before you have obtained permission of the Mandarins; especially of the Hoppo who comes to measure the ship and settle the customs, which

which must be paid according to her dimensions. The trade of Amoy is not easily carried on, by reason of the difficulty they have to find security for the money which you must advance to the merchants. Therefore it behoves strangers to take care of not being made their dupes by too much confidence in the Chinese.

INSTRUCTIONS FOR SAILING FROM THE GREAT LADRONE ISLANDS
TO POOLO CONDORE, THROUGH THE INNER PASSAGE BETWEEN THE
PARACEL, AND THE COAST OF COCHINCHINA.

By Captain HAYTER.

"THE best time of sailing from the Coast of China, according to all navigators, is in the last quarter of the Moon, which is not so subject to the gales of wind that blow on this coast and in the gulf from the latter end of July to February.

"Sailing from Macao, or from the Typa, you will steer South, until you get the length of the island of *Monte de Trigo*, which is situated near that of *Chinicko* on the Coast of Hai-nan, from which going 12 or 13 leagues to the southward, you will steer S. W. by S. the latches to the S. S. W.

"When you have steered thus, 80 or 90 leagues, with a northerly wind, without having latched to the S. W. the course clears you of the head of the Paracel, which is in the latitude of $16^{\circ} 30'$ North. But should the wind be from the N. E. or E. by N. you will then steer S. S. W. as soon as you have left *Monte de Trigo*, 6 or 7 leagues.

"When you are got the length of the north head of the Paracel, which you will leave 14 or 15 leagues off you, to the eastward, you will then steer S. W. the latches to the southward, if with the northerly wind; but if from the eastern board, which is frequently the case in this northerly Monsoon, when the winds blow from the last quarter as far as Cape Avarella, you will steer S. by W.

"This course will carry you to make the land between the islands of *John * Presto* and *Poolo Cambir*, taking particular care not to fall with the land in the night, for in this Monsoon, the weather is so thick and hazy, that in the day-time you make it with great difficulty, and must be close to it before you see it.

"If you think yourself near in the night, you will haul off it S. by E. till day-light, when you are to steer again to make it, in order to shape your course along the coast which runs S. by E. Be careful not to come too near the coast from the island of John Presto, to *Cape Avarella*; but give it a discretionary offing as the wind may be either from the northern or eastern board.

* *Ciampelo*. q?

" Several ships having neared the coast too much with an easterly wind, have not been able to weather Cape Avarella, but were obliged to anchor to the northward of it, in danger of being lost. You are then to direct your course as you have the wind 4 or 5 leagues from the land or more, if necessary. *Note*, There is a good channel between Poolo Cambir and the main, where is good shelter from easterly winds in case of necessity.

" Cape Avarella, which lies in the latitude of 13° , is known by a high mountain over it, and a rock at the foot of the cape. To the southward of Avarella, you will keep the coast aboard, because the channel between it and the Paracel is narrow. The currents set to the southward, towards the Paracel, and you may often have squalls from the N. W. which will throw you on the sunken rocks off *Poolo Cecir do mar*: therefore you must not quit the land, till you are 7 or 8 leagues to the southward of *Poolo Cecir da terra*, because abreast of this place in the offing, there is a shoal, called by the Dutch *Holland's Garden*, on which an English ship lost her rudder: so that from Cape Avarella you will keep the coast aboard as before mentioned, being then clear of any other danger, but what is above water.

" The currents before mentioned, which run in these parts, are to make you cautious of keeping on board to *Poolo Cecir da terra*; the nearer which you will find shoaler soundings, and the channel narrower, but in the offing you will have 60 fathoms. From Cape Avarella to *Poolo Cecir da terra*, is about 40 leagues. *Poolo Cecir* is about $11^{\circ} 12'$ latitude North, being an island a league long, naked and without danger; from the middle of it rises a peak, which has the appearance of a tower. The island lies as the coast, S. W. by W. and N. E. by E. at the south point of Padaran, about a league from the main: you will have close aboard of it 4 fathoms, thick sand and red rock.

" Being in the soundings of *Poolo Cecir da terra*, steer as the coast lies, till you are 10 leagues to the S. W. of this island, which will be between the shoals: from hence steer S. W. in soundings of 18, 19, and 20 fathoms, that is 20 fathoms the off side, and not nearer the land than 17, because of a shoal, called *Matbew Brito*, near which you will have 15 or 16 fathoms, and the next cast aground. It is 5 or 6 miles from the coast, and begins abreast of *Tiger Island*, extending about 3 leagues.

" The currents set S. S. E. and S. E. with violence, so that your best way is not to cross over till you are clear of the shoals before mentioned, keeping soundings of 19 or 22 fathoms, gray sand and shells. Avoid, above all things, *Poolo Cecir do mar*; and in case the current should set you into 26 fathoms, steer more westerly till you get into the above soundings; after which, steer S. S. W. and this course and soundings will bring you to pass about 4 or 5 leagues to the eastward of *Poolo Condore*, where you will have 20 and 21 fathoms, fine sand."

**DIRECTIONS FOR SAILING BACK FROM CHINA TO INDIA OR EUROPE,
THROUGH THE STRAITS OF BANCA AND SUNDA.**

By M. D'APRÈS.

THE departure of ships from the Coast of China should be between the middle of November and the middle of February; for although your business would permit you to sail at the beginning of the eastern Monsoon, the winds are still so changeable, that you had better wait till they are a little settled.

From *Macao* you steer a course to go between the Little island *Potoe*, or *Middle island*, and those on the west side; and observe to keep rather nearer the latter, on account of the dangers which surround the former: having passed it, you may steer S. $\frac{1}{2}$ E. to get soundings on the *Macclesfield shoal*.

Navigators have taken great care to ascertain their reckonings by this means, going to China, but have neglected to do it coming back: if you consider the importance of the object, they are certainly in the wrong; for in the first case, an error can only occasion a small delay; in the other, they must sail through many dangers, of which no visible warning is given, and where a very small error may cause the loss of a ship. The precaution is therefore absolutely necessary when you are homeward bound.

"The course, in order to strike soundings on the *MACCLESFIELD*," says Mr. *Robertson*, "ought to be regulated according to the winds and weather.—In sailing out of *Macao Roads* with a strong gale hanging far to the eastward, it will require a S. S. E. course; if it overblows, this will cause a high disagreeable chopping sea; then a still more easterly course will be necessary. But in general, with pleasant weather and the wind at N. E. a S. by E. $\frac{1}{2}$ E. course will keep the ship in the true direction: if it should however be found, by time-keeper, or other means, that this course leads beyond 1 degree or 1° 5' East of the *Ladrone*, it will then be necessary to bear up more to the south; as by exceeding that longitude from the *Ladrone*, hitting it would be uncertain."

Having struck ground on the *Macclesfield*, steer to the S. W. 1° or 2° W. till in the parallel of latitude 12° 30' North; then S. W. to get sight of *Poolo Sapata*. In steering, if in this latitude you see it not, you must make sure of *Poolo Condore*, the better to shape a course from hence to *Poolo Timon*.

In the instructions to go to China, I have mentioned *Andrada Rock*, and *Middelburg Shoal*; they deserve an equal attention at your return.

The bearing of *Poolo Condore* from *Poolo Timon* is N. 20° E. * it will not be diffi-

* Or N. 26° according to others.

cult therefore to shape a course from the former to the latter, according to its distance and bearing from you. As for the direction and strength of the currents in this season, the rules are not more certain than during the western Monsoon. Several ships have been driven toward the Natunas, others toward the Malaya coast; the signs of being near the former are mud soundings and a greater depth than toward the opposite coast. When you think yourself near the latitude of these islands, if you have 45 or 50 fathoms, bear to the westward, in order to gain the Coast of Malaya, the decrease of whose depth is a surer indication of your approach to it, than the quality of the soundings.

I am going to mention here, continues M. D'Après, what Mr. *Alexander Dalrymple* has obligingly communicated to me concerning the passage from POOLO CONDORE, or its offing, to POOLO TIMON; the remarks of that able navigator and his knowledge of those seas cannot be but usefully perused by all those who frequent them.

"When being in 7° latitude North, you have soft ground, under 40 fathoms, you are certain of being in the good track: had you less than 30 fathoms, you would be to the westward of the meridian of Poolo Timon, consequently you ought to bear to the eastward, being between $6^{\circ} 40'$ and $5^{\circ} 40'$ North. On the contrary, if you had sand, and the depth should prove from 40 to 30 fathoms, you would be on the eastern bank, and then you ought to gain toward the west. Being more to the southward than $5^{\circ} 40'$ you have a greater depth, as from 40 to 50 fathoms; even in the places where the ground is mixed with sand, unless you should be to the eastward of the Natunas, you will find from 35 to 34 fathoms water.

"Thirty fathoms, ooze, is a very good depth to keep in; for 25 miles North of Poolo Timon, you will have 28 and 29 fathoms, and even less as you approach it; so that it becomes a sure guide; though perhaps it would be better, coming near Poolo Timon, to keep in 35 fathoms, as there are from 40 to 45 in the channel between this island and the Anambas: therefore you will be certain of being toward the Malaya coast, if you keep in 35 fathoms, and cannot fail of seeing Poolo Timon, as well as of passing without danger.

"I am very far from thinking that in the N. E. Monsoon, there is a current which sets toward these islands; it seems, on the contrary, that there is an opposite current. Of this I had a very sensible proof at the end of December 1761, when at sun-set finding myself in 30 fathoms water, having sailed 8 leagues to the westward, I found in the morning, by the sight of Poolo Timon, that I had been at the same time driven 24 miles to the southward, which could proceed only from a swift current running to the S. E."

Captain *Boswald* of the ship *Ganges*, coming from Manilla in 1759, one hour before he had sight of the northernmost of the Natunas, of which he reckons the situation in $4^{\circ} 48'$ latitude North, being himself in about $5^{\circ} 15'$ had no ground at 50 fathoms; so that it appears that the sand bank does not join to the Natunas islands.

The

The height of Poolo Timon makes it easily seen at a great distance, unless obscured by cloudy weather, as sometimes happens at this season. Having descried it, you shape your course, according to your distance from it, to pass 5 or 6 leagues to the eastward of *Poolo Aore*, or nearer, if you think proper; but be on your guard, especially in the night, against the tides setting in between these islands.

Ships bound for the Indies must take their course toward the Straits of Malacca; but those bound to Batavia, or directly to Europe, may observe what follows.

In sailing from 5 or 6 leagues to the eastward of Poolo Aore, steer S. S. E. 20 leagues, then S. by E. so as to go clear of the banks said to be in latitude 25' or 30' North, N. E. by N. of *Poolo Linging*: when they are doubled, you may steer S. by W. as far as the Equinoctial Line, and continue this course so as to pass, according to computation, 12 or 13 leagues to the eastward of Poolo Linging. You keep this track, not on account of the dangers which surround the east part of this island, as there are none at a distance from it that render its access dangerous, but to prevent the effect of a current, which at this season sets to the south-westward; so that if you were to make a direct course from Poolo Aore, to range along Poolo Linging at a distance only of 3 or 4 leagues, you should run a risque of falling, in the night or thick weather, upon the *Dominis*, or the east point of Poolo Linging. (See page 458.) I have observed, from the comparison of several tracks of ships in this passage, that the greatest difference, to the westward, did not exceed 8 or 9 leagues, at farthest, so that in following what I recommend, I am pretty sure you will always pass 3 or 4 leagues wide of Poolo Linging.

From this island you sail toward *Poolo Taya*, according as you find the currents: but if you should happen to fall so far to the eastward of Poolo Linging, as to prevent your seeing it, you must then steer S. W. to get sight of Poolo Taya, and pass between it and the *Seven Islands*, keeping them at 3 or 4 leagues distance. From hence S. by W. will lead you to *Batacarang Point* (p. 444), which bounds on the west side, the north entrance of the STRAITS OF BANCA.

The bearings of *Monopin Hill*, which may be seen a great way off in clear weather, will better direct you how to enter the Banca Straits; you must be very careful not to approach the Isle of Banca, but keep along the Batacarang shoals, in 8 or 9 fathoms, till you have passed the rock *Friderick-Hendrick* (p. 445); the more the depth increases, the nearer you are to it.

In sailing from the Seven Islands to Batacarang Point, when you are 4 or 5 leagues from the entrance of the Straits: if the night or thick weather prevent your seeing *Monopin Hill*, it will be necessary to anchor, waiting for clear weather, or the return of the day, to enter: otherwise you may fall foul of *Friderick-Hendrick*, or Batacarang shoals. The north and north-east parts of Banca are not well known, and have a greater number of islands than are laid down in the charts; on this subject follows a remark from the *English Pilot*.

Captain

Captain *John Harle*, of the *Macclesfield*, coming late from China, the Sun being in his zenith *, was deceived by the currents setting to the S. E. he took *Poolo Totty* for *Poolo Taya*, and fell in with the Coast of Banca, where he found very good soundings in 18 or 20 fathoms, at a reasonable distance off shore, with some small islands on the coast, but so near that none would covet to go between them. He went between the islands that lie off, and the south (east) point of Banca, in mid-channel, 18 fathoms; but he believes they might have gone much nearer the shore, and recommends it as a very good passage.

Although no accident happened to this ship, the same success is not always to be expected; and it is advisable to beware of falling into the like inconveniency.

Having passed *Friderick-Hendrick* you are to follow the directions already given, p. 445, for sailing to the Straits of Sunda.

INSTRUCTIONS FOR SHIPS BOUND TO MANILLA.

FROM *Poolo Sapata* you shape your course about N. E. as high as $12^{\circ} 30'$ without making a greater casting, on account of the dangers you meet with in the passage from *Poolo Sapata*, and which have been seen by several ships, either in going or coming back.

The King's ship *South Sea Castle*, in her passage from *Poolo Sapata* to *Manilla* in 1762, saw two low sandy islands lying N. E. and S. W. the distance between them 2 or 3 leagues: the northernmost bore N. N. W. and had a high tree on it, the southernmost N. W. by W. distant 7 or 8 miles. Latitude in, by account at that time, $11^{\circ} 30'$ North, and longitude made from *Poolo Sapata* 4° East. *Poolo Sapata*, by estimation, S. 68° W. distance 97 leagues; sounded, no ground.

In the same year a country ship named *the Sabut Jung*, going from *Bengal* to *Manilla*, remarks that between *Poolo Sapata* and the island *Cabra* lies a low island, almost in the fair way, which must be avoided by sailing to the northward of it. "Few or none," says the journal, "lay it down in its true latitude, which is $11^{\circ} 28'$ North, Meridian distance from *Poolo Sapata* $5^{\circ} 12'$ East." It is so low that we did not see it till within 3 miles of it, in clear weather. To the westward it appears clear, but to the eastward is a low sandy bank; and about 7 leagues East of the island is a shoal on which we had only 8 fathoms water.

When you are come into the latitude of $12^{\circ} 30'$ you may steer directly for the Island

* You cannot then depend on the latitude observed with the instruments commonly used at sea.

Cabra, its Meridian distance from Poolo Sapata is exactly $11^{\circ} 45'$ according to the respective longitude of both places.

The ISLAND CABRA, or *Goat Island*, in $13^{\circ} 56'$ North latitude, and $119^{\circ} 55'$ longitude East of London, is flat, rocky, and seemingly steep on all sides, but lower at each end, whose slope is very gradual to the sea-side: it is about 9 or 10 miles in length, near as much in breadth, being almost round, and may be seen from a ship's deck 6 or 7 leagues. When it bears S. E. by E. it is then on with the island LUBAN, which being very high and mountainous, can be seen 17 or 18 leagues off. Navigators commonly begin and end their reckoning at Goat island.

Being 3 leagues to the northward of Goat island, you will steer N. by E. toward the CORREGIDOR, or *Mirabella*, and *Marivelles Island*, a pretty high and large island near the entrance of Manilla Bay, but rather nearest the north shore: it bears from Goat island N. E. $\frac{1}{2}$ E. distance 15 leagues; there is plenty of good fresh water near the west part of this island, under a very high, steep cliff, about $\frac{1}{4}$ mile from the pierced rock; but it is bad landing on a stony beach, though the water is always smooth.

In sailing from Goat island to the Corregidor, you will see FORTUNE ISLAND, which is small, but high and rocky; it bears from the Corregidor S. by W. $\frac{1}{2}$ W. 5 or 6 leagues. You leave it on the starboard side, and passing it about 3 leagues to the westward, will have no soundings till you come within 2 or $2\frac{1}{2}$ leagues of the Corregidor; thereabout you find from 40 to 50 fathoms, sandy ground. Keeping on toward the Corregidor, you shoalen your water gradually to 40, 35, 30 fathoms, and to 26 or 27, two miles to the westward of it.

As you near the Corregidor, you perceive to the E. by S. of its south-west point *Poolo Cavallo*, a rock like a sail, which lies about half-way between it and the south shore, and bears from the Corregidor S. E. by S. about 2 miles; it is steep on all sides. You have 20 fathoms within $\frac{1}{4}$ mile of this rock, and from 20 to 24 between it and the island. Between the rock and the south shore, there are from 20 to 17 fathoms within $\frac{1}{4}$ mile of the shore, all clear, sandy ground, and no danger but what you see.

There is another rock called by the Spaniards the *Monja* or the *Nun*, and by the English the *Hay-cock* from its appearance; this bears from the Corregidor W. $\frac{1}{2}$ S. about $2\frac{1}{2}$ miles, and is pretty high, and steep to on all sides, having 27 fathoms within $\frac{1}{4}$ mile all round it. Between the Hay-cock and the north shore you find regular soundings from 27 to 28 and 20 fathoms, $\frac{1}{4}$ mile from the shore, fine, clear sandy ground: between it and the Corregidor from 27 to 22, 29 and 30; and the nearer the north-west part of the Corregidor, the deeper the water.

At a very small distance off the north-west or west part of the Corregidor, there is a rock with a hole in it which you may see through: within a cable's length of it the depth is 30 fathoms. A-breast of the Corregidor, mid-channel between it and the north shore, you have 26 fathoms; and the nearer the Corregidor, the deeper the water; in-

creasing

creasing from 26 to 36, 48 and 52 fathoms, within $\frac{1}{4}$ mile of the island. On the other hand it shoals quickly from 26 fathoms mid-channel, to 16, 15, within $\frac{1}{4}$ mile of the north shore, hard, stony ground.

Being in 45 or 50 fathoms, about 2 leagues to the westward of the Corregidor, steer directly for that island; and if you have a fair wind, the common passage is between the Hay-cock and the Corregidor, and so between it and the north shore, keeping the Corregidor on the starboard hand.

From the Corregidor to MANILLA the course is, E. N. E. $\frac{1}{4}$ N. distance 11 leagues; and to CAVITÉ E. by N. $\frac{1}{4}$ N. 8 or 9 leagues. In this passage you must be very careful of a very dangerous shoal that lies in the fair way; it is called ST. NICHOLAS'S SHOAL, having but 11 feet in the shoalest part, within a ship's length of which to the N. W. you find 13 or 15 fathoms: and it is so steep to, that you have no notice whatever of the danger. As you steer from the Corregidor for Manilla or Cavité, keep the north or north-west part of that island W. S. W. till you bring the steeple of Cavité church to bear East, and a remarkable hummock, close to the sea, (on a point of land on the north shore) to bear W. N. W. $\frac{1}{4}$ N. you are then clear of St. Nicholas's shoal, and may steer for Cavité or Manilla, at your pleasure. Between the shoal and the north shore, you have in the fair way 17 and 18 fathoms, which decrease gradually to 5 and 4 toward that shore: and as you are steering to the eastward you will likewise shoalen your water regularly from 17 to 14, 12, 10, 8, 6, and 5 fathoms, in which depth you may in safety anchor off Cavité, a large mile from the shore, the bottom muddy, and good holding ground.

If you are to the westward of the Corregidor with the wind easterly, or E. N. E. which is right out of Manilla Bay, it is best to go through the south channel between the Corregidor and the south shore; there being more room for a ship to turn to windward, no danger, but what may be seen, and the south shore being bold and clear. The nearer the Corregidor, the deeper the water on all sides, as we have already observed; but you must carefully attend to the following remarks.

1st. When you are come abreast of the easternmost high land, on the south shore, which bears from the Corregidor S. E. $\frac{1}{4}$ E. you must be cautious how you stand toward that shore; for the tail of St. Nicholas's shoal trenches away gradually toward the said high land, and you will sometimes shoalen your water suddenly from 12 to 6 or 7 fathoms, hard, rocky ground. Therefore it is advisable to keep in no less than 12 or 13 fathoms; and as you get farther to the eastward, not to stand in less than 15 or 16; for you may have 15 fathoms at one cast, 7 or 6 $\frac{1}{2}$ the next, and then 4 fathoms on the very edge of St. Nicholas's shoal.

2^o. To weather away the east part of the Corregidor, as soon as you can, you will have 22 or 23 fathoms within $\frac{1}{4}$ mile of it. When you can do it, stand over for the north shore, and keep working up along that shore; it is bold to, having in most places

15 or 16 fathoms $\frac{1}{2}$ mile off shore, and 10 or 12 at a cable's length off the same; though in some places, it shoalens very suddenly from 15 to 10, 7 and 5 fathoms, there is no danger but what is visible.

After you are past the Corregidor, the north shore has a clear, sandy bottom, and good anchorage. As you proceed farther to the eastward and northward, you will find the north shore flatter, and the soundings more gradual, being $\frac{1}{2}$ mile off shore, 17 or 18 fathoms, $\frac{1}{4}$ mile off 12 fathoms, which decrease regularly to 10, 8, 6, 5, 4 and 3 fathoms close in shore. As you stand to the southward, you avoid St. Nicholas's Shoal, by conforming yourself to the leading marks above given for that purpose.

In Manilla bay there is a tide not very regular, which ebbs and flows 3 feet perpendicular; about the Corregidor it sets strongly to the westward for 24 hours together, especially with the wind easterly; then ceases during 4, 5, or 6 hours, after which it runs strong to the westward again. Between the Corregidor and the north shore, the tides flow 18 hours together to the westward, pretty strong, and then turn to run with the same strength to the eastward, for 6 hours, in which time the water has flowed to its full height. The tide sets to the westward 18 hours out of the 24; sometimes the flood, and one ebb; and it flows as much in 6 hours, as it ebbs in 18; but the time of high water is not ascertained.

CAVITÉ is properly the sea-port of Manilla, though it is a town and garrison itself. It is situated on a low point of land which forms a cove and good harbour; though it is shallow in some places, there are 6 or 7 fathoms in the deepest part of it, the bottom soft mud: great ships may lie well sheltered from the S. W. and West winds. The Spaniards have there a very good marine yard, well stored with all kinds of naval stores; build their galleons and other ships, and have excellent conveniences for heaving ships down, at which they are very dexterous. It is fortified on the land and sea sides.

You find no good water in Cavité, though there are many wells, plentifully supplied, but the water is all brackish, the inhabitants are obliged to fetch their water from old Cavité.

MANILLA lies from Cavité N. N. E. 3° E. about 3 leagues, and no danger between them; the soundings are regular, from 5 fathoms at Cavité to 6, 7, 8, and 9, half way to Manilla, and they decrease gradually to 8, 7, 6, 5, and $4\frac{1}{2}$ or 4 fathoms, off Manilla. If you have occasion to turn between both places, you may stand in shore any where to 5 or $4\frac{1}{2}$ fathoms, the shores being very flat, with a gradual shoaling every where, all clear ground, and muddy bottom.

You lie in a good birth in *Manilla Road* with the following bearings, viz. the fishing stakes, at the river's mouth N. 18° E. The north Bastion N. 37° $\frac{1}{2}$ E. The Cupola E. 37° N. The south-west Bastion E. 20° N. in 5 fathoms water, 1 mile from Manilla. All the Spanish ships generally anchor in Cavité harbour.

The city of MANILLA, capital of the Philippine islands, and the seat of the Spanish government, lies in $14^{\circ} 39'$ latitude North, and in $120^{\circ} 56'$ longitude East from Lon-

don, by the astronomical observations of Mr. *Le Gentil*. The variation was 36' West, in 1763.

The air at Manilla is very unwholesome, during the months of June, July, and August, being very sultry and subject to noxious fogs produced by the exhalations from the swampy lands round the city. Then fevers and fluxes are very rife: and the musketoes also become very troublesome in these months.

Wood is a very scarce article both here and at Cavité, and must be brought from the inland parts of the country. The river at Manilla is very good water; if your ship lies in the road, the watering is very expedite; you go up the river to the bridge, and fill your casks in the boat.

DIRECTIONS FOR SAILING FROM MANILLA TO THE STRAITS OF SINCAPOUR AND MALACCA.

By Mons. D'APRÈS.

THIS passage being made in the N. E. Monsoon, you find the winds always favourable to your course; therefore, in leaving the Bay of Manilla, you steer for the island *Cabra*, or *Goat island*, so as to pass 3 leagues to the northward of it. The course is S. W. + W. distance 15 leagues.

You take your departure from Goat island, steering W. by S. to get into the 12th parallel of latitude, and 9° meridian distance from Goat island. With this course, you pass to the northward of all the dangers mentioned in the preceding article.

When you are come into 12° of latitude, with the above meridian distance, your course must be to the S. W. to get sight of *Poolo Sapata*.

As the currents during this Monsoon run often to the westward, you must attend carefully to their set, lest you should meet with the south islands of the *Paracel*, or unexpectedly, in that S. W. course, with *Poolo Cecir do mar*, or the *Scorpion's Tail*.

If the weather, which at this season, is very often hazy, should not permit to see *Poolo Sapata*, you are to steer so as to come into the soundings of 40 and 45 fathoms, fine gray sand, which are found in 9° 15' latitude, between *Poolo Sapata* and *Poolo Condore*, and thence steer W. S. W. to see *Poolo Condore*: the depth decreases as you approach this island, so that you find but about 20 fathoms, when in sight of it to the eastward. After all, if you cannot see the island, you will follow the directions before given from *Poolo Condore* to *Poolo Timon*, coming back from China.

ENUMERATION

ENUMERATION OF THE SHOALS, &c. IN THE CHINA SEA.

By ALEXANDER DALRYMPLE, Esq.

Latitude North.	Longitude from Greenwich.		Authorities.
20.54	116.50	PRATAS, according to Mr. Bayley.....	} Resolution & Discovery, 1779.
20.39	116.35		
20.58	117. 0		
20.45	116.44		
20.52		Do. . according to Captain King.....	} Long-boat, 1761.
20.28			
19.33	113. 4	ST. ESPRIT BANK, nearly round, 18 or 20 leagues in circuit, on north part rocks even with the water's edge, on south part 9, 10, 15 fathoms, sand, rocks and gravel.....	} Ship Affeviedo, 1755.
19. 9		Supposed part of same, 8 fathoms, red coral rocks..	La Paix, 1763.
19. 7	112.17	Do. 12, 10½, 6½, 8, 9, 12, (none at 20 and 40), sand, with small stones and coral rock; steered on it N. N. W. ½ mile, and N. ½ W. 1½ mile; appearance of shoal water to westward.....	} Grosvenor, 1765.
17. 4		BREAKERS AND SOME ROCKS above water, extending N. E. and S. W. 3 or 4 leagues, supposed north-east shoal of Amphitrite, or Triangles.	} E. Sandwich, 1784.
16.35	112.52	LOW BLACK ISLAND, with white sand, round and long bank of white sand to North, and Breakers. High black rock from mast-head West 8 or 9 miles when the above island bore N. W. ½ N. 8 or 9 miles distant.	} E. Lincoln, 1764.
16.30		PYRAMID ROCK, to northward of it a low sandy island, and another to the N. E.....	} Empress Elizabeth, 1720.
16.14	112.56	Soundings 13 fathoms, rocky.....	E. Lincoln, 1764.
15. 6		SCARBOROUGH SHOAL.....	Scarborough, 1748.
15. .		Do.....	Affeviedo, 1755.
15.11	117.41	Do. S. by E. and N. by W. about 12 miles long and 4 broad, Breakers, 2 small rocks just on surface about middle of the shoal.....	} Royal Captain, 1773.
15. 5			
11.48	112.31	SHOAL OF SAND, N. E. and S. W., 45 fathoms at 2-leagues distance.....	} South Sea Castle, 1762.

Latitude North. ° /	Longitude from Greenwich. ° /		Authorities.
11.40	112.16	Do. by <i>Nichelson's</i> account <i>Two low sandy Islands</i> .	<i>South Sea Castle</i> , 1762.
11.34	112.11		
11.39	. . .		
11.36	113.51	Probably the same.....	<i>Ship Luconia</i> , 1764.
		Do. Two SHOALS, BREAKERS and DRY SAND, with one or two small rocks.....	} <i>Capt. Gaspar</i> .
11.34	113.51	BANK OF SOUNDINGS.....	
11.32	113.29	LOW ISLAND, about 1 mile extent, covered with shrubs and seawreck, at east side a Dry sand bank about a mile extent. Island N. N. W. 4 miles, no ground at 85 fathoms.....	} <i>Saubut Jung</i> , 1763. <i>Ditto</i> , 1763.
11.25	114.15	BANK OF SOUNDINGS.....	
11.24	114.12	Do. 9 fathoms, rocky.....	<i>Falmouth</i> , 1762.
11.20	. . .	BREAKERS.....	<i>Sieur Goffard</i> , 1741.
11.11	113. 8	ISLAND.....	<i>Captain Eaton</i> , 1685.
11.10	112.54	BREAKERS.....	<i>Capt. Nat. Bacon</i> , 1768 & 69.
11. 2	111.40	LOW ISLAND.....	<i>Dolphin</i> , 1767.
10.58	112.12	Do. with sand to southward and Breakers 2 miles N. W. from the island.....	<i>Essex</i> , 1762. } in Com- } <i>Falmouth</i> , 1762. } pany.
11. 1	115.17	LOW BLACK ISLAND, surrounded with Breakers, and has a bank of white and reddish sand at south point, and at north a long ledge of Breakers and green water; lies N. E. and S. W.....	} <i>Cavallo Marino</i> , 1752. } q? <i>Rooke</i> , 1707.
10.57	117.53	BANK OF SOUNDINGS, 8, 9, 10, 11, fine white sand and coral rocks, about a mile long East and West, and $\frac{1}{2}$ mile broad.....	
10.48	115.13	VERY WHITE SAND above water, with ledge of Breakers at each end stretching about $\frac{1}{2}$ mile; it lies N. E. and S. W. about 2 $\frac{1}{2}$ miles.....	} <i>Sea Horse</i> , 1776. } <i>Cavallo Marino</i> , 1752. } q? <i>Rooke</i> , 1707.
10.47	114.29	NORTHMOST OF 2 SANDS, just above water.....	
10.46	112.47	LEDGE OF BREAKERS.....	<i>Royal Charlotte</i> , 1773.
10.42	113.26	SMALL ISLAND with 2 reefs of Breakers.....	<i>Dolphin</i> , 1767.
10.41 } 10.39 }	112.47	LEDGE OF BREAKERS.....	<i>Sieur Goffard</i> , 1741.
10.35	112.38	1st ISLAND by <i>Dolphin</i>	<i>Dolphin</i> , 1767.
10.31	. . .	BREAKERS lying East and West, 1 mile long and very narrow.....	} <i>Ditto</i> , 1767. } <i>Ganges</i> , 1759.
10.22	112.31	BREAKERS.....	
10.20	. . .	SMALL LOW ISLAND.....	<i>Dolphin</i> , 1767.
10.18	115. 7	SAND BANK with high Breakers, lies N. N. E. and S. S. W.....	<i>Ganges</i> , 1759.
10.16	110.34	ANDRADE, soundings on it.....	} <i>Cavallo Marino</i> , 1752.
10.17	112.35	LONG ISLAND.....	

SAND

Latitude North.	Longitude from Greenwich.		Authorities.
10.10	. . .	SAND LIKE A HANDKERCHIEF, about 1 mile long, dry and Breakers.....	Capt. Eaton, 1685.
10. 8	112.15	BREAKERS	Dolphin, 1767.
10. 7	112. 9	NORTH END OF GREAT REEF.....	Do. q? Rooke, 1709.
10. 5	. . .	SAND.....	C. Eaton, 1685.
10. 2	111.56	BREAKERS	Hardwicke, 1744.
10. 0	. . .	SAND.....	C. Eaton, 1685.
9.59	111.56	REEF.....	Dolphin, 1767.
9.54	112. 1	REEF, great length, all feather white, nothing above water.....	Hardwicke, 1744.
		ROCK ANDRADE.....	Effex, 1760.
9.50	108.41	BREAKERS, supposed <i>Andrade</i> , 25, rocky and no ground.....	Falmouth, 1762.
9.39	114.58	SHOAL, 3 <i>Black Rocks</i> in the middle; at south point many Breakers, and at north point green water, but scarce any breaking; lies N. E. and S. W. 6 miles in length.....	Cavallio Marino, 1752.
9.22	. . .	BREAKERS, $\frac{2}{3}$ of mile extent.....	Ganges, 1759.
9.15	. . .	BREAKERS in 3 places, a <i>Reef</i> under water, stretching N. N. W. and S. S. E. about $\frac{1}{2}$ a mile, 8 or 9 leagues from <i>Palawan</i> , $\frac{1}{10}$ with- in 1 mile of <i>Reef</i>	Sea Horse, 1776.
8.58	110.40	SMALL REEF, $\frac{1}{4}$ league long, from East to West, on which the sea broke; 7 fathoms at west point	Sieur Gossard, 1741.
8.57	116.54	BREAKERS, extending W. by N. and E. by S. 6 miles long and very narrow; east end appeared to be rocky, as sea broke very high on it; west point supposed sand, on which sea did not break so high, and only seemed to roll over it.....	Sea Horse, 1776.
8.47	116.44	BREAKERS, lying N. E. and S. W. about 10 or 11 miles long, and 3 broad, in form of half moon with the curve to the westward, and is all fine white sand, just under surface of water....	Ditto.
8.31	114.21	SHOAL, 25, black rocks and breakers, lies N. by E. and S. by W. 9 miles long and 3 broad....	Cavallio Marino, 1752.
8. 4	110.30	BANK OF 14 FATHOMS, failed West 4 or 5 miles on it.....	Prince Wales, 1755.
8. 0	115.25	HIGH BREAKERS.....	Viper, 1769.
7.50	114.30	ROCKS and HIGH BREAKERS	Walpole, 1783.
7.30	115. 7	BANK with HIGH BREAKERS.....	Viper, 1769.
7.24	110.50	BANK (seems to be <i>P. Wales-Bank</i>).....	Viper, 1769.

Rocks

Latitude North. ° /	Longitude from Greenwich. ° /		Authorities.
6.57	113.41	ROCKS and BREAKERS.....	<i>Royal Charlotte</i> , * 1773.
6.55	116. 0	NORTHMOST OF TWO SHOALS, 2½ fathoms, about 4 leagues asunder, <i>Borneo</i> in sight.....	} <i>Mr. Barton.</i>
6.14	113.17	BREAKERS, N. E. and S. W. 1½ mile long.....	
6. 9	. . .	FORTY-FOUR BLACK STONES, The Breakers N. by E. 4 or 5 miles.....	} <i>Ditto.</i>
5.54	114.18	SHOAL about 4 miles long, North and South, had 6 fathoms, rock; believe so little as 3 fathoms; had 55 and 60, shells, 2 cables length.....	
5.49	113. 2	SHOAL of 4 fathoms.....	} <i>Cavalle Marino</i> , 1752.
5.39	113.15	SHOAL, 5 fathoms, rocks.....	
5.39	. . .	} TWO SHOALS, rocks seen on northmost.....	} <i>Euphrates.</i>
5.37	113.24		
5.37	113.11	SHOAL, 3 fathoms, rocks; then 10. 17.....	} <i>C. Kirton?</i> q?
5.35	112.28	REEF of Sand and Rocks, with high Breakers, lying N. N. W. and S. S. E. ½ mile long, and very narrow.....	
		BANK of 5 fathoms, sand and rocks.....	} <i>Sea Horse</i> , 1776.
		SHOAL, sometimes broke N. W. and S. E. These appear in 4 different parts, extending about N. W. and S. E. 7 or 8 miles in length.....	
5.28	114.39	THREE or 4 SHOALS near together.....	<i>Cavalle Marino</i> , 1752.
5.24	112.30	SHOAL, 1½ fathom, hard rocks N. N. E. and S. S. W.....	} <i>Luconia</i> , 1776.
5. 5	112.24	SHOAL of 2 fathoms.....	
4.57	112.30	DRY SAND, S. 37° E. from last shoal about 8 miles distant.....	} <i>Ditto.</i>

* It is probable that the shoal seen by the *Louisa* is the southern part of this, or continuous shoals, and that they lie in that part of the *Cuddalore's* track, when we were carried providentially to the northward of them by a strong current; otherwise it would make our track both in the *London* and *Cuddalore*, between the two shoals, which could scarcely have happened without seeing either.

INSTRUCTIONS FOR SAILING FROM THE STRAITS OF SINCAPOUR, THROUGH THE STRAITS OF BALABAK, AND THENCE TO SOOLOO.

By Captain DODWELL.

“AS soon as a ship is got out of the Straits of Sincapour, I think she must shape her course so as to make POOLO DOMAR, whose passing is safe on either side. I took my departure from it the 22d of September, and coasted along the Anambas, having 35 fathoms, fine sand, within 2 leagues of the shore. I tried the current, and found it to set 2 knots an hour to the southward; upon which, (it being calm) I came to an anchor, and sent the boat to sound; 32 fathoms water was the least she met till within a mile of the shore, where she had 15 fathoms, coral, and then decreased gradually to one fathom. By a good observation I made Poolo Domar to lie in $2^{\circ} 36'$ latitude North. I steered N. N. E. $\frac{1}{4}$ E. from the Anambas, to the latitude of 5° , by which course, according to the draughts, I should have made the Natunas; but I could see nothing of them, and I am thoroughly convinced that they, as well as the Anambas, are falsely laid down. By going this track, instead of making Poolo Timon, I shortened my distance at least as much as the difference between the diameter and the semicircle.

“When in the latitude of 5° I think the best way is to steer N. E. to the latitude of 7° , in which parallel it is safest to make land. I made $12^{\circ} 30'$ meridian distance from Poolo Domar to BANGUEY PEAK; this peak may be seen at day-light, about 14 leagues off, and makes, at the first appearance, like a sugar-loaf, its top inclining to the eastward. There is no danger in approaching it at night, provided the lead is kept going, and a good look-out. I had from 74 to 60 fathoms, about 12 leagues off; and when Banguay Peak bore S. E. about 3 leagues, I came to an anchor in 23 fathoms. When in those soundings, by steering to the north-eastward, you soon get sight of Balabak, and see 3 small islands on the starboard hand, which are called *Salinsingan*; to the northward of these runs a reef of rocks, to the distance, as I compute, of 2 leagues. Advancing to the northward, you will get sight of 2 small islands; and as I find them without a name, I shall call the southernmost the RABBIT, and the northernmost the CONEY. As soon as you descry the Rabbit, steer so as to give it a birth of about 2 miles on the larboard hand, having particular regard to the tides; the flood setting E. N. E. and the ebb W. S. W. The shoalest water is on the starboard hand; which you deepen again by hauling to the north-westward, and when the body of the Rabbit bears

bears W. S. W. about 3 leagues, you are then out of the *Straits of Balabak*, and may steer E. by S. till within sight of *Cagayan-fooloo*, which may be seen in clear weather at about 12 leagues distance. The soundings are so irregular in those parts, that there is no depending on them, which, added to the shoals, makes the straits dangerous. From having no ground I shoaled several times into 7 fathoms suddenly, sometimes 15, 20, to 30 fathoms, and in sailing two or three ships lengths, got out of soundings again; the ground being in some parts rocky, in other a white sandy bottom.

" I do not think it would be safe to steer a more southerly course, than E. by S. especially in the night, before you get sight of *Cagayan-fooloo*; for upon my having little winds, and being afraid of the current setting to the northward, I hauled up E. S. E. and by day-light discovered two rocks above water, each of the size of a large ship, and distant about a league from each other, of which no mention is made in any chart.

" As soon as you get sight of *Cagayan-fooloo*, steer right for it: as you approach it, you will make several islands; and for the southernmost point of the largest, direct your course: it is bluff and high, and has 20 fathoms water within a mile of the shore; in this depth I came to an anchor, and had several of the natives a-board, with fowls, fruits, &c. The capital town is at this end of the island, where their prince resides. The lateness of the season prevented my going on shore. After a few hours stay, I got under way, and stood to the south-eastward, leaving two small islands which lie to the southward of the large one (and which I shall call *PASSAGE ISLANDS*) about a mile on the starboard hand.

" There is no danger near *Passage islands*, but there runs a reef of rocks from the large island, to appearance very dangerous. When *Passage islands* are doubled, shape your course for the south end of *PANGUTARAN*, which, by a good observation, I make in the latitude of $6^{\circ} 12'$ North. There is no sounding in all this track, and particular care must be taken of the tides; the flood setting strong during the springs to the S. E. and almost a constant ebb setting to the N. W. during the neaps. The passage I made to *Sooloo* was between the south end of *Pangutaran* and the *Deacon Islands*, getting no ground with 60 fathoms line till within a league of *Soolo Town*, where I had 30 fathoms, which decreased gradually in shore."

INSTRUCTIONS FOR SAILING FROM THE WESTWARD TO CHINA,
 ROUND THE NORTH END OF BORNEO, BETWEEN THE ISLANDS OF BALABAK AND
 BANGUEY, TOWARD SOOLOO; AND OUT TO THE MAIN OCEAN AMONG THE
 PHILIPPINE ISLANDS TO THE NORTHWARD OF MINDANAO; IN THE
 S. W. MONSOON.

By JOHN WATSON of the ROYAL CAPTAIN, 1762.

THE north end of BORNEO lies in $6^{\circ} 31'$ latitude North, by a good observation, and is easily known by a very high mountain near it called *St. Peter's Mount* (*Keny Balloo*): its extreme ends with a bluff point not very high, off which are 3 low, woody islots. Come no nearer the shore, than 6 or 7 leagues, the north end bearing E. N. E. for within that distance you will find very irregular soundings with great overfalls of hard coral rocks: from hence haul away to the northward, till the north end of Borneo bears East, or E. $\frac{1}{2}$ S. you may then steer about N. N. E. 6 or 7 leagues, and you will make 3 or 4 islands, the largest of which has toward the north-west end a high peak, just like a sugar-loaf, whose top inclines to the westward, when you are to the North of it. This island is called BANGUEY.

You must leave all these islands on the starboard hand, or to the eastward of you; off the two nearest you have regular soundings for 4 or 5 leagues, 6 or 7 miles off shore, in 38 or 40 fathoms water, soft muddy ground; then you will fall into rocky ground again.

When Banguay bears E. by N. you may steer N. E. till you make 3 more low woody islots nearly together, keeping between 20 and 30 fathoms, all coarse rocky ground. At the same time you will see a large island to the northward of you, called BALABAC, or *Balaba*, with a small islot off its south-east end.

Having made these islands plain, steer right away for the northernmost of the 3 low woody islots, giving it a birth of about 3 miles, till it bears E. by S. or E. $\frac{1}{2}$ S. then haul close round it; for as you pass it, the body bearing from South to W. S. W. you may come within 1 mile of it, carrying from 22 to 35 fathoms water, rocky black ground, and from 20 to 22, fine white sand. You will observe, in passing the island, a spit of sand about $\frac{1}{2}$ mile in length, which runs from the easternmost part of it, toward the S. E. I judge this island lies in the latitude of $7^{\circ} 23'$ nearly. You must be careful in keeping it aboard for the following reasons, viz. when the body of this island is bearing S. W. by W. about 3 miles, you have only 5 fathoms water, coral ground; and 5 or 6 miles to the N. E. lies the head of a white bank of sand dry at low water: only stretching to the eastward and northward, withal for 9 or 10 miles from this

sand, and quite over to Balaba, it is full of coral banks, with overfalls, from 3 or 4 to 14 or 16 fathoms.

If it should happen that you are obliged to work to windward between Banguay and Balaba, you must take great care that the lead, or the leads (it being requisite to heave them on both sides) are kept constantly going; and as soon as you come into 20 or 19 fathoms on the Balaba side, put about immediately, as in 2 or 3 casts you will always fall into 6 or 4 fathoms. Standing toward Banguay put about in the same depth, if you are pretty near the 3 low woody islots, for there you will not be above 3 or 4 miles without a reef of rocks extending from the southern part of the islots almost over to Banguay: but if you are 3 or 4 leagues to the westward of these same islots, you may stand into 17 or 18 fathoms with safety.

You will find overfalls all the way athwart the channel; and from side to side it is all hard rocky ground of variegated coral. We experienced a strong current, sometimes flacking for a few hours, during which time I judge the flood-tide made, though not strong enough to appear as a regular tide on the surface of the water.

From the 3 low woody islots we ran N. 81° E. distance 66 miles, and made the islands of St. MIGUEL bearing E. by N. 4 or 5 leagues off, three of them nearly together, and one away to the southward; we were then in 12 fathoms water, coral ground. These islands are small, and a bank or reef of coral rock runs out 5 or 6 leagues to the West and North of them; the soundings besides are very irregular on the west side of the bank, and in some places have breakers, which renders them very dangerous: you must keep here a very good look out at the mast-head, and have recourse to your lead; if you should find yourself on the reef, you clear it by hauling to the N. N. W. 5 or 6 leagues, and may then steer to the eastward, and so to the southward by degrees, making the lead your principal guide.

When you are clear of St. Miguel islands and their reef, which lie in $7^{\circ} 35'$ North latitude nearly, haul up to the south-eastward till you are in the parallel of $6^{\circ} 50'$, making about $1^{\circ} 48'$ East, meridian distance from St. Miguel islands. Then you will see 2 small islands very near each other: the southernmost one being a single peaked hummock, and the other a roundish hummock lower than the former; these are called the HARE'S EARS. At the same time you will likewise perceive a large isle, with very high land, particularly on the east part, and whose body is bearing E. $\frac{1}{2}$ N. or E. by N. 12 or 14 leagues, while the other bears S. E. easterly, about 6 leagues. Between the Hare's Ears and the high land, which is part of the Isle Mindanao, lies the passage to Sooloo; for to the southward or south-westward of the Hare's Ears, as you stand toward them, you make some low land full of trees, with shoals and breakers, to all appearance very dangerous.

Should you not be able to fetch Sooloo, or was you obliged, by any accident to bear away for China, provided the S. W. Monsoon still continues, there is a good passage

passage between the PHILIPPINE Islands; but to strangers the easternmost part of it will appear somewhat dangerous within so many islands among which the tides have an excessive rapidity. We were forced through it by the set of these tides, after having been led into a great error by the only draught given to us for a guide.

Now being off the Hare's Ears, and resolved to attempt this passage, you must steer by the land, (a very bold shore all round) from N. N. E. to N. E. until you are in the latitude of $8^{\circ} 45'$ North; then you will make two small islands, low and woody; about 6 or 7 miles off shore, the westernmost of which is called ALIGUAY, and the other SILLINA. You sail between these and the main of MINDANAO, finding no ground at 40 fathoms within $\frac{1}{2}$ mile on either side of you. When you are making these small islands, if the weather is tolerably clear, you will descry the islands of NEGROS and FUEROS to the northward, and after you are past Aliguay, will perceive also the island of BOHOL to the north-eastward: all these are very high land, as well as the major part of the neighbouring islands. At the same time, and before you round the point of Mindanao, then bearing E. by N. and appearing to be the northernmost extreme of the island, you open a fine deep bay; its entrance is about 3 miles wide, and has 3 or 4 sandy coves, as you pass along, where, I believe, a ship may find safe anchoring ground. There is a reef of rocks at the east side of the entrance, which runs about half channel over, but the west side seems to be clear of danger. We saw a small town on the south-east part of the bay.

Having passed the easternmost point of this bay, the land inclines rather to the southward, for about 8 or 10 leagues, and then forms another large bay 15 or 16 leagues deep; and if it is very clear weather, on the northernmost part of it will bear about E. by N. 28 or 30 leagues a high sugar-loaf peak, for which you steer; this you will find to be CAMIGUIN ISLAND near the Coast of Mindanao; it is steep to, with very high land, and has a small island lying off the east end of it. When you are passing Camiguin you will make the islands of LUCASAVA, LEYTE, and PANAON, from North to about N. E. with the northernmost part or Point of Mindanao bearing about N. by E. in $9^{\circ} 45'$ latitude North, by observation, and about 4° to the eastward of the Hare's Ears.

You must steer then for the channel between Panaon and Mindanao, which is about 6 or 8 miles wide, having LOMASAVA on the larboard hand, or the northward of you. After you are in this channel, haul round Panaon till you make, to the eastward of it, the great island of Leyte, which you will know by a single high peaked mountain terminating in a low point very gradually toward the East, and some part of which shews a very pleasant and open country.

Bearing North, or N. $\frac{1}{2}$ W. after you are up to this point that lies in $10^{\circ} 18'$ north latitude *per* observation, steer about N. N. E. until you are in the parallel of $10^{\circ} 33'$, when you would have the passage fairly open to the Main Ocean, leaving OMONHON,

SOLOAN, and two more small islands on the larboard side, and LINAGO on the starboard, with a whole chain of other islands reaching quite away, and falling in with the Isle of Mindanao, in the latitude of $9^{\circ} 35'$ North.

When you are in the channel between Panaon and Mindanao, you will make two small islands very woody, one of them right a-head, and the other about nearly to the southward of it: now the only soundings we struck were by hauling between the southernmost one, and the isle of Mindanao, where we found the small Spanish settlement of SURIGAO, off which is a good clear anchoring ground, fine gray sand, and by bringing the town to bear about S. by W. $\frac{1}{2}$ mile distant: but if you bring it to bear S. W. 3 or 4 miles, or to the westward of that, neither your anchors nor cables will hold against the strength of the tides which run there. All the land and islands thereabout are very woody, except that part of Leytè which has been mentioned, and no soundings are to be had at 80 and 90 fathoms, a cable's length from the shore and rocky beaches.

INSTRUCTIONS FOR THE TRACK TO BE FOLLOWED FROM POOLO AORE,
TO PASS ACROSS THE JAVA SEA,
THROUGH THE STRAITS TO THE EASTWARD OF JAVA.

By Monf. D'APRÈS.

WHEN you are 5 or 6 leagues to the eastward of POOLO AORE, you are to steer S. E. to make VICTORY ISLAND, which lies 35 leagues S. E. by E. from it, and in $1^{\circ} 39'$ latitude, North. The soundings in this passage are 30 fathoms, fine gray and whitish sand. This island, or rather islot, looks at a distance like a pye; it is covered with wood, and has a little cove of white sand on the south-west side. Three leagues S. E. by E. from it lies a small white islot.

From Victory Island, you sail to the S. E. to get a sight of ST. JULIAN'S ISLOT, distant 19 leagues S. E. by S. and in $49'$ latitude; you may range it along with an offing of $1\frac{1}{2}$ or 2 leagues. The course from this islot to the island of ST. BARBARA, is S. E. by S. and the distance 16 leagues. In sailing from one to the other, you perceive on the east side an assemblage of small islots to the number of 13 or 14, which lie 6 or 7 leagues to the northward of St. Barbara; they are high, and the northernmost is the highest.

St. Barbara Island, which lies under the Equator, is high land, and would be taken for two islands, as its extremities are lower than the middle, especially the north-east point, whose appearance is that of a barn; this island is about 3 leagues round, the
greatest

greatest extent being from N. E. to S. W. its south-west point, which is steep, seems to be cut off, and to the N. W. almost joining the island, are two small rocks. You may anchor to the S. E. of this island in 25 fathoms, and get wood and water.

From St. Barbara Island you must steer away S. E. by S. easterly for the islands of Sooroot and Carimata, which lie on the south-west part of the Island of Borneo. The soundings in this track are 26, 24 and 22 fathoms, which decrease to 20 and 18 when you approach Sooroot. They reckon 42 leagues, S. E. 3° S. from St. Barbara to Sooroot: and it is advisable not to come near Sooroot in the night-time, lest you should fall, on the north side, amongst some islets which are to the northward of Carimata, and where the shoals are dangerous.

CARIMATA is a very high island and almost covered with clouds; it is $2\frac{1}{2}$ leagues long, about 1 league broad; and 18 or 20 leagues from *Succadana* river in the island of BORNEO; its south point has a bank which stretches to the S. W. about $\frac{1}{2}$ a league. SOOROOT (*Surute*) lies to the W. S. W. of Carimata, and in the channel between the two, which is broad enough, ships may pass in a case of necessity, observing to range along Sooroot nearer than to Carimata; but it is better to keep in the offing. These islands are inhabited. You may get water at the west point of Sooroot, in a sandy plain at the foot of a hill of moderate height; and you can anchor in 10 fathoms water. The latitude of Sooroot is $1^{\circ} 43'$ South*.

Being East and West of Sooroot, about 2 leagues distance, you steer to the S. E. to make Poolo Mancop, which lies in $3^{\circ} 3'$ south latitude; 18 leagues S. E. of Sooroot, the soundings are 18 fathoms, ooze; from hence you have 17, sand; then 16 fathoms sand and ooze. In this course you perceive several islands on the east side. It is advisable not to take a greater offing than 20 fathoms on account of *St. Clement's Shoal*, which lies 10 leagues S. W. of Poolo Mancop: you ought not likewise to go farther than 16 fathoms toward the land. POOLO MANCOP lies on the extremity of a bank projecting about 10 leagues to the S. S. W. of Borneo; it is not to be approached, on account of the irregular depths of water. You perceive, as I have said already, several islets along the Coast of Borneo, between Sooroot and Poolo Mancop. The tides are very strong in this part, and you must be careful of their setting, especially during the night.

Ships which intend to pass through the Straits of *Bally* or *Lombok*, after they have doubled *St. Clement's shoal*, steer to the southward, to get a sight of *Carimon Java*; this

* According to Mr. *Robertson*, Carimata may be seen 15 leagues. Sourouton (Sooroot) is not near so high or so large. The north part of Carimata is in latitude $1^{\circ} 33'$ South, and longitude $108^{\circ} 50'$ East of Greenwich, by Captain *Frazer's* chronometer. Mr. *Farrington*, now Captain of the *La Scelle*, by observation of the Sun and Moon, makes Sooroot island to lie in $108^{\circ} 45'$: as he had not the objects East and West of the Moon it cannot be so exact; however it agrees tolerably well with the chronometer: the latitude of its north part is $1^{\circ} 37'$ South.

island lies in $5^{\circ} 46'$ south latitude, and about 15 leagues N. W. by N. of *Mandals* or *Mandalique Island*, situated at the west point of *Rambang Bay*; having approached the Coast of JAVA, they range it along, toward the East, as well as the Isle of MADURA: off this coast, which affords a delightful prospect, there is no danger but what is laid down in the Chart; the depth you find in sailing along being proportional to the distance you are from the shore, enables you to continue your course during the night, and to anchor there in case of a calm, or an adverse current.

The north-east point of Madura lies in $6^{\circ} 49'$ latitude South; and about 6 leagues to the E. S. E. you come to PONDY ISLAND that makes the entrance of the straits eastward of Madura, through which you are to pass to go to the Straits of Bally, Lombeck, and the others lying toward the East. Therefore, after you have passed Pondy, at $\frac{1}{2}$ league distance, you sail to range along the west side of GILAN or RESPONDY, from whence your course is to the S. S. E. toward CAPE SANDANA, the north-east point of Java, being very careful of the *Muyden's Rocks*, which are 2 leagues distant from it, N. by W. 3° W.

Cape Sandana being doubled, you are to steer toward GILBOANG ISLAND, to pass either within or without it, and then enter the straits of BALLY. I must observe that these straits, in coming from the southward, cannot be attempted with perfect safety but in the N. E. Monsoon; and are to be avoided in the contrary Monsoon, on account of the want of wind, and the strong currents met with in the narrows, and whose violence drives the ships on the Coast of Java, or that of Bally, where you find no anchorage. Several English ships have experienced it, and found themselves in the greatest distress.

The Straits of LOMBECK, to the eastward of Bally island, appear to deserve the preference, being about 4 miles broad, though they have no anchoring places, and their tides are very strong. To go to these, after you have passed Respondy island, you steer S. E. by S. in order to make Bally island, which you coast along till you come to the entrance of the Straits; I shall give no particular description of them, not having been able to get any, nor of the other straits to the eastward, as far as *Larantoecca*, to which you may go, in sailing along the north side of the islands.

INSTRUCTIONS FOR SAILING FROM BATAVIA TO THE STRAITS OF MACASSAR.

Translated from the Dutch, and communicated by Captain PARKER.

HAVING passed the *Rhyland Beacon*, on the larboard side, you steer right upon the little island *Edam*, in latitude $5^{\circ} 56'$ South, and sail between it and *Alkmaer Island*. Edam bearing North 1 mile (nautic) shape your course E. N. E. 20 leagues; steer

steer then E. by N. to the latitude of $4^{\circ} 15'$; and then due East, keeping this latitude, will bring you in sight of POINT SALATAN*, and about 2 leagues distant.—Come no nearer the point than 9 fathoms; from that depth it shoalens suddenly to 5 fathoms.

Point Salatan, whose latitude is $4^{\circ} 8'$ South, bearing North, in 9, 10, or 11 fathoms you will coast Borneo; steer then E. by S. 23 English (nautic) leagues, it will bring you in sight of a high peaked island, called MORESSES†, which you leave on your larboard hand two English (nautic) miles off; at that distance, when it bears North, you will have 16, 17, and 18 fathoms water.—N. B. During the West Monsoon the currents in the months of December and January set strong between Borneo and Java, in the fair way, E. N. E. which must be attended to.

From the island Moresse keeping your course E. N. E. $\frac{1}{2}$ E. 7 or 8 leagues will bring you in sight of three small islands called DWALAER, and the TWO BROTHERS; the northern one is the Dwalaer, and the two southern ones the Brothers. You pass between Dwalaer and the Two Brothers in 12 fathoms, clay and mud. When past them you will deepen to 20 and 21 fathoms, clay and mud. The latitude of Dwalaer is $4^{\circ} 10'$, and of the Two Brothers $4^{\circ} 24'$, they lie N. N. W. $\frac{1}{4}$ W. and S. S. E. $\frac{1}{4}$ E. $4\frac{1}{2}$ leagues from each other‡.

Being amongst those little islands, you will see the north-east part of GREAT POOLO LAUT, bearing between the N. W. by W. and N. W. and the northernmost point N. by W. When you are past the Dwalaer and the Two Brothers, the currents begin to set N. E. by E. and N. E.—Under Great Poolo Laut lie three large islands and a small one, but they are close in shore of Poolo Laut, on the north side thereof§.—The north-east point of Great Poolo Laut will be known by a small rocky islet lying off the said point.

From the Dwalaer and Two Brothers steering N. E. by N. $10\frac{1}{2}$ or 11 English (nautic) leagues will bring you in sight of three small islands called the THREE ALIKE ONES, and also Maragalong, or Samara-Battea, (in latitude $3^{\circ} 37'$ South) which islands you

* Point Salatan, the south point of Borneo, is low and even, with high land at the back of it. The English accounts place it in $4^{\circ} 12'$ latitude South.

† Called also *Marussa*, *Monoreffar*, and by the sailors *Monsieurs*; it lies in $15^{\circ} 21'$ latitude South; it is pretty high land. To the southward of it about 4 leagues, lie the small islands of *Laurot*, or LITTLE POOLO LAUT, which are full of hummocks, and not high.

‡ The distance between the island Dwalaer, and the Brothers, according to a note of Captain *Parker*, appears to be more than 14 miles. This island is not high, and when bearing W. N. W. has the appearance of a saddle. The Two Brothers are very small and steep to.

§ About 3 leagues to the northward of the easternmost of these islands, and also close in shore of Poolo Laut, lies the remarkable islet called THE BURTON. At first sight it shews itself like a single tree; but when near it you descry a high round rock, which appears as if cut by art. Seven fathoms water are found close to it, all round, except the north-west part, where there is a shoal.

leave on your larboard side, or 2 English (nautic) miles off. The depth between Dwalaer and the Brothers to the Three Alike islands, with a N. E. by N. course is 14, 15, 16, 17, 18, and 19 fathoms, clay and mud: here may be observed that the currents set N. E. and N. E. by E.

From these small islands keep, if possible, the depth from 8 to 14 fathoms, coming no nearer the Borneo shore than 8 fathoms, nor farther off than 14; until you are in latitude $2^{\circ} 10'$ south, when you are passed all danger on the coast of Borneo; for in 16 and 17 fathoms, from the Three Alike islands, lie *Two Sand-banks* even with the water's edge.

From $2^{\circ} 10'$ south latitude, with an E. N. E. course, you will have for a while 14, 15, 16, and 18 fathoms; but in $1^{\circ} 50'$ South, in sight of Borneo, you will find 22, 25, and 30 fathoms; in $1^{\circ} 20'$ South, 10 leagues off Borneo, 28, 29, 30, 32, and 35 fathoms, clay and mud. And in $0^{\circ} 40'$ South, 50 and 45 fathoms, 12 leagues from Borneo; which land hereabout is very high.

In latitude $1^{\circ} 0'$ North, you will see the Coast of Borneo, 6 or 7 leagues off, and the Coast of CELEBÉS, north-west part, in the E. $\frac{1}{2}$ N. a great way off, and no soundings.

From the latitude of $1^{\circ} 0'$ North, we steered N. E. 24 leagues, and observed in $1^{\circ} 33'$ North. We found the islands Banca to lie in $2^{\circ} 10'$ North, and the islands between *Banca* and *Sangir* from $2^{\circ} 15'$ to $2^{\circ} 20'$ north latitude.

THE STRAITS OF MACASSAR.

THESE Straits, above 130 leagues in length, lie between the island of Borneo to the West, and the isle of Celebés or Macassar to the East. They are 40 leagues broad, at their entrance, and for 80 leagues farther North, where their width is reduced to 25 leagues. A cluster of numerous shoals and small islands, which begin about 17 leagues from the north-east point of Great Poolo Laut, extend across the whole straits from West to East, leaving on each side a clear passage supposed from 8 to 10 leagues broad. To this cluster, called by the natives BALABAGAN ISLANDS, the Dutch have given the name of LITTLE PATERNOSTERS, to distinguish it from another cluster of shoals situate to the southward, in the Celebés Archipelago; these are named the *Great Paternosters*.

The western passage, which is the best, lies between the Paternosters and Borneo, and is universally followed, in a course parallel to the shore of Borneo, by ships going to or coming from China. You have soundings there from the Paternosters to Borneo, whereas no ground can be found between them and Celebés. Besides it is probable, as a learned navigator has observed, that the large rivers of Borneo will occasion a more sensible

sensible tide than on the steep coast of Celebés. This tide, as well as the Paternosters, must check a current from the northward, which is most likely to run to the southward in the deep sea of Celebés, to which you ought to get over as you approach the Line, where the Coast of Borneo embays, and is reported to have no soundings, that coast near *Kanneoongan* Point being steep to. Besides captain *Carteret* represents that in the middle of November, the S. W. winds on the Coast of Celebés constantly drew round as he got 6 leagues off that shore, till they became W. N. W. and N. W. towards the Borneo side.

Though the West Passage has been much frequented of late, the written directions for its navigation are less copious than the importance of the subject requires, or more difficult to obtain than we had imagined.

From Great Poolo Laut, all the way up to the Paternosters, soundings are found in a direct line, from 10 to 28 fathoms, clay ground, or mud; and sometimes broken shells, and no danger from the Three Alike to the Paternosters. Opposite the north end of these shoals is *TANJONG ARÉS*, or *Ragged Point*, a low headland on the isle of Borneo. Mr. *Robinson*, chief officer of the *Duke of Montrose*, remarks that the ship being, December 14, 1788, at 1 P. M. in latitude $2^{\circ} 14'$ South, the north part of *Ragged point* bore N. W. by W. distance 4 or 5 leagues; at the same time they saw two sand banks dry and almost even with the water's edge. "These appeared," says Mr. *Robinson*, "to be almost 4 or 5 miles from us; and I suppose they may be about 3 leagues from the Borneo shore. At this time the nearest one to us bore due West, and the one nearest the shore was open to the southward of it. We had 12 fathoms water at the time. Great caution ought to be taken hereabout, particularly in the night, as those banks lie very much in the fair way between the Paternosters and the Coast of Borneo."

Mr. *Robinson* observes, that all along what is called *Ragged point*, lies the most dangerous part of the Straits. In standing off, after you deepen above 12 fathoms, the soundings were very irregular, deepening and shoaling 2 or 3 fathoms at a cast as quick as the lead can be hove: when standing in shore to 5, or even $\frac{1}{2}$ less than 5 fathoms; and off, to 10, 11, 12, or 13, had always very regular soundings; so that it plainly appeared that the safest method was to keep nearly in those depths. In standing in shore, after passing the depth of 7 fathoms, they found it very flat, and seldom above 1 foot in a dozen casts of the lead, the bottom strong clay.

The southernmost of the Paternosters was seen by the *True Briton* going to China, November, 1785. It is a low sandy island; with three small trees upon it: their account places it in latitude $2^{\circ} 50'$ south, and the ship passed at the distance of 3 miles from it. Keeping on a N. N. E. course 18 miles, they saw a grand cluster of islands (THE PATERNOSTERS) bearing from N. W. to E. N. E. which they endeavoured to get a passage through, but without success, from the immense number of shoals which are scattered among them; so that they were obliged, after having been 6 days in the middle of

that cluster, to return nearly the way they got in. They found the current generally setting to the southward, though not strong. The islands are all woody, and some of the wood as hard as iron: they found much of it lying cut down, and supposed it had been done by the people in the prows, which then were about the ship, but so shy that none of their men would venture on board. The only living creature seen on these islands, was a bird like a pigeon.

From a-breast of the pitch of Ragged point, the course through the straits is to N. E. along the coast of Borneo, till they reach the point of that island called *Kanneoongan*, and by the Dutch *Aert Gysfens Point*, or *Cape Gysfels*. From this to *Point Dondo* on Celebés, which is prodigious high land, the Straits are narrowest, being not more than 25 leagues wide, as we have already observed. From *Kanneoongan*, the track across the Straits, is likewise to the north-eastward to make *Cape Rivers* the north-westmost point of Celebés.

CONSIDERATIONS ON THE PASSAGES TO AND FROM CHINA.

Extracted from Mr. DALRYMPLE'S MEMOIR, 1788.

THE many ships for China, which go round by India, may make it necessary to offer some remarks concerning the proper measures to be pursued by such of them, as shall not be early enough to make their passage to Canton, in the usual way, through the China Sea, by the *Funnel*.

It is impossible to assign a day, after which that Passage ought not to be attempted; but Mr. *Dalrymple* does not think ships have any chance to succeed, by that passage, if unable to reach *Sapata* by the middle of October, at the furthest.

It appears obvious, that all ships bound to China from any part of India, whether from the *Malabar Coast*, the *Coromandel Coast*, or *Bengal*, ought to pass the STRAITS OF MALACCA, except during a war.

After getting out of the straits, their object is to go to China by the COMMON PASSAGE if they can; but their proceedings must be guided by the winds they find: if these permit, they should stand up in the ordinary course towards *Condore* and *Sapata*, for a very few days will carry them to the northward of *Karang-Bander*, and secure their passage, by the Coast of *Luzon*. But if they find the winds contrary, they must consider, what other Passage they will pursue; since, in case the steady N. E. winds are set in off *Condore* or *Sapata*, it is in vain for them to make the attempt by the common passage, up the *Funnel*; but if the winds are variable, and sometimes to the southward, they should certainly make the attempt; and when past the latitude of 12° North, stand to the east-

ward, whenever they can without decreasing their latitude, and to the northward when they cannot make an East course; till they have got into 14° north latitude, then it will be best to keep to the eastward, even if they should go to the southward of East: but they must take care not to diminish their latitude under $13^{\circ} 30'$ North, on account of Breakers reported to lie 5 or 6 leagues to the westward of Mindoro.

Ships bound to China, from India, too late to pass by the *Funnel*, have two options, viz. to go to the North, or to the South, of BORNEO; both afterwards branching into several passages.

Ships, which have stood over to the eastward from Condore and Sapata, have unexpectedly fallen in with many dangerous shoals; erroneously supposing, that the vacant space in the Charts indicated that part to be free from danger, instead of being unexplored: in such circumstances, I should be inclined to get as soon as possible into the common track from TIMOAN (Poolo *Timon*), towards BALAMBANGAN.

In standing over from the Straits of Malacca towards the north end of Borneo, ships may pass, either on the North, or South, of the ANAMBAS and NATUNAS, as circumstances may occur. The track towards Balambangan, to the northward of these islands, is most free from shoals; those seen by the *Royal Charlotte* and *Louisa**, being the only discovered dangers; to the southward and northward, of this track, are many shoals already known, and it is likely there are many more not yet discovered; which require constant attention to avoid, by a good look-out, and boats a-head. The SOUTHERN ROUT has however the advantage of soundings, and the probability of better weather; at the same time that, late in the season, it is also likely the winds will be most favourable towards the Coast of Borneo.

When a ship has got over towards Balambangan, she has the choice of proceeding by the west Coast of PALAWAN; or, between that island and Borneo, through the SOOLOO SEAS.

The passage, by the west Coast of Palawan, has been successfully made by several ships, in the month of November, and when Mr. *Dalrymple* came down it, in December, he could with more facility have gone to the northward. But the many dangers, off this coast, have greatly alarmed some of those who have gone that way; they have made a comparison of it with the passage through the Straits of Macassar, between Borneo and Celebés, to which last they give the preference.

Ships, from Europe, ought, unquestionably, to prefer the STRAITS OF MACASSAR to the Coast of Palawan; but although ships have gone by these Straits in safety, all unfrequented navigations must be liable to danger; and the space of unfrequented navigation, by the Straits of Macassar, is much greater than by the Coast of Palawan: at the same time, some ships have met with shoals in the Straits of Macassar. However, if I was,

* See Enumeration of the Shoals in the China Sea, in latitude $6^{\circ} 57'$ North, and $6^{\circ} 14'$ North, p. 507.

continues Mr. *Dabrymple*, passing to China by the west Coast of Palawan, I would put into port, on the appearance of bad weather; but the common cast of navigators will prefer to keep the open sea, though surrounded with dangers, rather than to run in with the land, where they are not well acquainted; and indeed almost where they are.

The Passage along the east Coast of Palawan does not appear impracticable, and therefore a ship, passing the Straits of Balabac, with southerly winds, might, perhaps, do well to push with them up that coast, as the shortest track to the Coast of Luzon, which being reached, the Passage to China is secure: but the great objection to this attempt is, that the sea, to the East of that island, is extremely full of dangerous shoals, very little known; and therefore, in case the winds should take a ship short, before getting up to the Cuyos, it would be very hazardous, without going back towards Balabac, to stand to the eastward, by which alone the passage could then be gained.

Supposing a ship past CAGAYAN-SOOLOO; she has three options, *viz.* going THROUGH THE PHILIPPINES; BY THE NORTH, OR BY THE SOUTH of Mindanao: this case comprehends also ships reaching SOOLOO, by the Straits of Macassar, late in the season. "If I was at Sooloo, under such circumstances," pursues Mr. *Dabrymple*, "I should prefer going to the northward, through the Philipinne; or even to the northward of Mindanao, in preference to going on the South of that island."

A ship, having passed Cagayan-Sooloo, should as soon as possible get over to the west Coast of MINDANAO, which is a bold shore; and, by keeping it close aboard, there will be no current; the same object is to be pursued by ships going from Sooloo late in the season, when the N. E. winds may be expected to prevail; such ships should pass, by the assistance of the tides, to the eastward of *Peelas* (Palas): there is a very strong current setting to the westward between Mindanao and NEGROS, which requires the utmost attention; for, till a ship has fetched under the lee of Negros, her passage through the Philippines is not assured: this makes it hazardous to push over directly for Negros after passing Cagayan-sooloo, lest the currents should carry the ship to the westward amongst the *Cagayanes*, which have many very dangerous shoals about them.

In case of meeting a fair spurt of southerly wind, after getting sight of Mindanao, you ought to make the most of it, and push directly for *Point Nasog*; after passing the latitude of 10° North. A ship may run through the *Cuyos*, or to the southward of them, as may be most convenient.

But if the wind should be baffling, or indeed, almost in any circumstances, late in the season, you must get over to the Coast of Negros, as soon as possible, and take care to keep the coasts of that island, PANAY, MINDORO, and LUZON close aboard, if the winds were northerly or easterly; but, after getting the length of Point Nasog, with a southerly wind, you ought, as before mentioned, make the most of it, and get up with the north-west part of MINDORO, as soon as possible; or rather run up between TABLAS and the east Coast of Mindoro, if the winds permitted, as that secures the passage to the Coast

of

of Luzon, which a strong N. E. * wind, or a calm, off the north-west point of Mindoro, where there are no soundings, might render hazardous, by forcing a ship from the land away to the westward: in the former case, a ship should stand back to the S. E. under the lee of Mindoro; and not off to the N. W.

The great, indeed only, objection to the PASSAGE THROUGH THE PHILIPPINES, is the danger of the Monsoon breaking up, whilst amongst the islands; for the places where a ship could take shelter are few, and not of easy access to a stranger: but in case, by the time you get over to the Coast of Negros, the N. E. winds are set in, this objection will be removed.

By the N. E. winds being set in, it is not meant that, in the Sooloo Seas, the N. E. Monsoon is a fresh steady wind, blowing from that quarter for some months without intermission; on the contrary, the winds from the northward never blow strong in those seas, for more than a few days at a time, when they are succeeded by light variable winds: and it is by taking advantage of these spurts of variable winds, that a judicious navigator makes the return of the northerly winds favourable to his purpose: "my experience," adds the author, "assures me that this is the case as late as the end of January towards Sooloo; but I cannot presume to say how far to the northward the circumstances are the same, though I have reason to believe at least as far as Manilla."

Along the south Coast of Mindanao there being no dangers known, nothing farther need be said concerning it, than, that by keeping in with the coast you are likely to have land and sea breezes to assist you, in getting to the eastward; whereas by standing off, towards the Siao Islands, you make the N. E. wind, which may be then expected to prevail, a foul instead of a fair wind.

Ships passing Mindanao, whether by the North, or by the South, should get sufficient easting, as soon as possible, to be assured of making FORMOSA, or at least the NORTH BASHERS, to secure the passage to China: and be certain of being far enough East, before they increase their latitude so much as to lose the Bocadero under their lee, which Passage they should pursue in case of having the wind so much to the northward, as to endanger their being embayed, on the east side of Lucon, to the northward of *Catanduanes*.

Most of the ships, which have gone to the East of Mindanao, have fallen in with islands, which are dangerous; being low land, without soundings to denote your approach to them in the night: and the danger is the greater, as they lie in a sea, subject to violent and uncertain currents. There are many more islands, than laid down in the

* Though I suspect, says Mr. Dalrymple, in a note, the N. E. wind will be found much stronger, through the Gut between Tablas and Mindoro, than in any other part of these seas; which consequently would be an obstruction to the measure here recommended.

draughts,

draughts, but few of the ships, who have seen them, had any observations to regulate the longitudes.

In the Gut between the Philippine and Formosa, gales of wind are very frequent at all seasons.

It is immaterial, after getting into 20° North, in what latitude the Bashees are passed, as there are no soundings around them: to the northward of *Bayat*, or *Orange Island* of the *BASHEES*, there are four small islands; the *Valentine*, 1764, passed in a clear channel, between the two northernmost and the two southernmost; but they describe rocks and breakers, between Bayat and that next it; as well as in the channels, between the two southernmost, and between the two northernmost. There is nothing else amongst the islands to be feared, unless what is above water, or very near shore; and the *Shoal to the westward of Fuga*. "Having been crippled in a gale of wind, in the *London*, we anchored on the 2d November 1764, at the south side of Fuga, under shelter of that island, where we lay till the 11th, put ourselves a little to rights, and then proceeded for China, having almost a continued gale of wind, till we reached the coast on the 15th. *Musa Bay*, at the west end of Fuga, is a place affording very good shelter and refreshment, except water, which is remote from the shore: the island has many wild cattle and horses, and plenty of guavos."

The Spaniards, at Manilla, have great apprehensions of the *Franciscan Moon* in October, and do not like to put to sea, till after the full. The *Sabut-Jung* suffered very much, by leaving Manilla in the beginning of October; and that navigation is then more dangerous than later, when the N. E. Monsoon is set in: after that, there is no difficulty of getting the Passage to China from Manilla, by keeping the weather-shore well aboard; and there is then a current in-shore, setting to the northward, 20 miles or more *per day*.

"Notwithstanding," concludes Mr. *Dalrymple*, "I have given a decided opinion against any eastern passage, for ships from India bound to China, in time of peace, it may indeed happen, that by accidental delays, the China ships shall remain, on the Coromandel or Malabar Coasts, so late as to find it impracticable to get into the Straits of Malacca, without standing across the Line, into south latitude for the westerly winds: in such case it would be improper to think of passing through the Straits of Malacca, or by any WESTERN PASSAGE; in these circumstances the only alternative is an EASTERN, or a PITT'S PASSAGE. It may therefore be proper to give an account of the Eastern Passages, and of the Pitt's Passage, for the information of those who may, by any event, be obliged to go either way.

"I do not think a casual ship from India ought to be dispatched to China, after the end of November, from Bengal, or after the beginning of November, at the very latest, from the Malabar or Coromandel Coasts; because there is no probability of such ship reaching

reaching China, in time to return to England by the ordinary passage, admitting, which is not probable, that there would be a cargo ready for such casual ship: a ship detained in India, from November to April, may be usefully employed; and, sailing in April, will arrive in China, in good time to be dispatched to England, by the Pitt's Passage, should there be any motives for sending the ship home that way, in time of peace. But the ships of the season destined for China, may by unforeseen events be detained in India after November, when even the difference of a month or two, in their arrival in England, may become an object of the utmost consequence.

"Ships from Bengal ought at all seasons to pass through the Straits of Malacca, in time of peace: from other parts of India, it is also eligible whilst practicable.

"Ships, passing the Straits of Malacca any time in November, ought, in my opinion, to proceed towards Balambangan, and from thence, either by the west Coast of Palawan, or through the Sooloo Seas, as may be found most convenient."

But in case ships, having passed the Straits of Malacca, either earlier or later than the end of November, should find the north-easterly winds set in without the Straits of Sincapour, they ought to give up all thoughts of a Western Passage, and take the advantage of the favourable wind to push over for Sooroot and Carimata with all expedition: and, giving Poolo Mankap a good birth; pass along to the south of Borneo at a sufficient distance to avoid the bank, which stretches along that coast, whereupon there appears to be some dangers; and, after passing Point Salatan, it is then to be considered, whether the season be so far advanced as to make it necessary to proceed by the Pitt's Passage, or whether it is still expedient to attempt the Straits of Macassar.

It must be obvious that, if the N. W. winds are not set in on the South of the Line, the Passage to the south coast of Borneo is scarcely practicable against the S. E. winds, if they should be found still to prevail, and that the Passage must be tedious, with the calms and light winds, which usually precede the coming Monsoon in low latitudes, and therefore, with any wind but northerly, it will be proper for ships, got through the Straits of Malacca, to stand over towards Balambangan; supposing them too late for the *Funnel*.

But although a ship has found a favourable wind to carry her to Point Salatan and Poolo Laurot, or Poolo Laut; she may find a southerly or easterly wind in the Straits of Macassar, both which would be fair for standing up these straits, though the last a foul wind for the Pitt's Passage: in such case you ought certainly make the attempt to get your passage by the Straits of Macassar, passing to the westward of the *Paternosters*.

A ship, passed the Meridian of Poolo Laut, having a northerly wind, must proceed the PITT'S PASSAGE; it is impossible to say how late the Straits of Macassar may be passed: the *Ganges*, captain *Dempster*; *Earl Sandwich*, captain *Wordsworth*; *London*, captain *Eastbrooke*; and *Kent*, captain *Tolme*, left Batavia for China the 5th December, 1783, all by the Straits of Macassar; they got sight of Poolo Laut the 17th, lost sight of it the 19th; kept on the Borneo side, frequently anchored, and got through the Straits the 26th.

Taking

Taking their departure from the north-west point of CELEBES, they saw MINDANAO the 31st of December, and continued in sight of it till the 2d of January, 1784; the same day had sight of SANGIR, passed to the southward of it the 4th, and lost sight of it the 5th; got sight of JILOLO and MOROTAY the 7th, lost sight of it the 8th. The *London* saw the MEANGIS about $5^{\circ} 20'$ north latitude, and about $1^{\circ} 37'$ East from the north point of Morotay the 15th; the PALOS (Pelew) ISLANDS the 23d, which they left the 25th, making the center of them to be in $6^{\circ} 51'$ north latitude, and longitude, by lunar observation, $133^{\circ} 20'$ East. They saw the BASHEES and FORMOSA the 7th February, as did the *Kent*; lost sight of Formosa the 9th, which the *Earl of Sandwich* also did on the same day; anchored in Macao Road the 14th; the *Earl of Sandwich* had anchored the 13th, and the *Ganges* the 6th.

Although ships appear to have made their passage in December by the Straits of Macassar, it is much to be questioned, if they would not have got to China, full as soon, by the Pitt's Passage, as by the rout they went; for the average of two ships leaving Batavia in November, (*Glatton* 1763, 67 days, and *Princess Augusta* 1764, 55 days), is 59 days, and the *Ganges*, &c. 1783 and 84 by the Straits of Macassar were 69 days. The *True Briton*, also by the Straits of Macassar, from *North Watcher* 5th of November 1784, was 74 days, and *Earl Mansfield* 1786, from *North Watcher* 1st of October 59 days: but the last ship was rather too early for the PITT'S PASSAGE.

Every ship passing the Straits of Macassar, and able to reach the Coast of Mindanao in December, or later, ought to pass to the westward of that island, and up through the Philippines; because they have then a probability of good weather, and the winds rather favourable than otherwise.

Ships going the Pitt's Passage in time of peace, when too late for the Straits of Malacca, may pass through the Straits of Sunda, they may then pass at option to the southward or northward of the THOUSAND ISLANDS, keeping between $5^{\circ} \frac{1}{2}$ and 6° south latitude till they make TANAKEKÉ, in latitude $5^{\circ} 30'$ south, $119^{\circ} 34'$ east longitude from Greenwich. They should pass through the STRAITS OF SALEYER, in longitude about $120^{\circ} \frac{1}{2}$ east, and without BOOTON, particularly attending to keep in with the east coast of that island, to prevent falling to leeward of BOORO: the track from Booton is to the North of BOORO and South of XULLABESSI, (*Sboolla-bessi*), between Ooby on the North and CERAM on the South; and lastly, between POPA on the North and MESSOOL (Mysol) on the South; whilst these are still visible, the lands which make the Pitt's Straits will be in sight: there is a variety of opinions concerning which Straits are most eligible, the PITT'S or DAMPIER'S; the argument in favour of Dampier's Straits is, that they have sounding*: but on the other hand the soundings do not extend through the whole of the Straits, and

* Mr. Robertson adds, that a ship is not so liable to be hampered in with the Coast of New Guinea, when clear of them, as it is the case with those who come by Pitt's Straits.

there

there are places in the Pitt's Straits where a ship might anchor to stop a tide; in case of necessity; but with good luck and taking the first of the tide, a ship may get through in one tide by the Pitt's Straits, which does not appear possible by Dampier's.

"Although I have said," adds Mr. *Dabrymple*, "ships, bound an Eastern or Pitt's Passage from the Straits of Sunda, should keep between $5\frac{1}{4}$ and 6° south latitude till they make Tanakeké; I must not be understood to mean, that those limits are absolutely necessary, in case the winds should happen to be more favourable for making easting, by going under that latitude; but if the true N. W. Monsoon be set in, the course will be optional, and I think about $5^{\circ}\frac{1}{4}$ to $5^{\circ}\frac{1}{2}$ South will be the best latitude to run down in, till you see SALOMBO, i. e. *Noesa Lombo* or *Castle Island*: it abounding with wild cattle. Captain *Wilson's* Memorandum says, the latitude of the hummock on it is $5^{\circ} 33'$ South, which is exactly the mean of nine ships."

Some ships have gone to the northward of the *Two Salombo Islands*, and some to the southward; captain *Wilson's* notes say, there is a rock S. 37° W. from the westernmost part of the *South Salombo*; but he gives no distance.

After passing Salombo, it is best not to exceed $5^{\circ}\frac{1}{4}$ south latitude, till you make Tanakeké, as the *Revenge* was on the *5 Fatboms Bank* in $5^{\circ} 53'$ South, and the *Glatton* in the same latitude on a bank, which they supposed to be the *Brill Bank*: by getting under $5\frac{1}{4}$, ships will have soundings on the foul ground, off the islands which lie to the westward of Tanakeké: but when they get sight of this last island, they must be attentive to their lead, so as to keep towards the outer edge of the bank to the southward of it.

When a ship is passed Tanakeké she has the lands for a guide, all the way through the Pitt's Passage. The only dangers known in it are

Bank of rocky ground 4 fathoms, about a mile broad, on that part where the *Grosvener* went over. They anchored on it, at 8 P. M. 31st January 1763.

9th February 1763. Shoal of 9 feet rocks and sand, on which the boat was, from no ground at 60; the bearings in the ship after tacking, on seeing the rocks from mast head, were

CUMBERLAND ISLAND, i. e. Way-gee-ooe, E. by N. $\frac{1}{2}$ N. to W. $\frac{1}{2}$ S. about 3 or 4 leagues.

A small island off ditto E. by N.

The North end of King George's Island E. by S. $\frac{1}{4}$ S.

The body of the rocks N. E. $\frac{1}{2}$ N. distance about 3 miles.

Besides these may be mentioned the Foul ground, probably very dangerous, that lies to the eastward of the east point of Batanta, which forms the Pitt's Straits on the North; the extent of this danger is not well ascertained.

INSTRUCTIONS FOR SAILING FROM THE STRAITS OF SALEYER
THROUGH PITT'S STRAITS, AND THE EASTERN PASSAGE,
TO CHINA.—PELEW ISLANDS.

From Mr. ROBERTSON'S Memoir, 1791, &c.

THE STRAITS OF SALEYER are formed by the north point of the island of the same name, and the south-east point of Celebés. Between these two points are three small islands in general named, *North* (St. Andrew's), *Middle* (St. George's), and *South* (St. Patrick's) islands. Middle island is the smallest, and the passage is of either side of it; that to the southward is esteemed the best, but both are equally safe; between South island and Saleyer is a wide space, but no passage for ships.

SALEYER ISLAND, where the Dutch have a small settlement, is of a moderate height; its north end at a distance appears like a small island, both to the eastward or westward of it. To the westward of *Hog Island*, near Saleyer, is a dangerous shoal with only 2 fathoms, sharp rocks upon it; it runs North and South a cable's length, and East and West $\frac{1}{4}$ mile.

In coming from the southward and westward, St. Andrew's, or North island is not easily discovered on account of the south-east point of Celebés projecting beyond it in that point of view. When you get to the eastward of it, the passage opens, and appears as wide as any of the others; but it is not supposed to be safe: the only danger hereabout is the *Horland's Rudfon*.

Your course, after having passed the Straits of Saleyer, is E. $\frac{1}{2}$ S. it will carry you clear of CAMBYNA, or *Cambona*, which is a very high island, 30 leagues to the eastward of Middle Island, and having a peak whose summit rises up above the clouds. The same course will bring you to pass, at a proper distance, South island in the entrance of the Straits of Booton, and also the south-east point of Booton.

SOUTH ISLAND is not easily distinguished when you come from the westward, and appears as part of Booton till it bears about North; then it opens, and shews a passage between them. In this track the Booton shore is to be kept close on board, until past the islands of *Tookan-Bessies*, which are very dangerous.

The latitude of South island is $5^{\circ} 46'$ South; HAGEDIS and South islands lie from each other North and South, and were found by chronometer in 123° east longitude from London.

* The *Princess Augusta*, which was near being on that shoal, calls it *Horland's Rudfon*; it is perhaps the same with that named *The Whale* in several Dutch Charts.

The

The north point of Bouton is in latitude $4^{\circ} 25'$ South; and to the northward of it lies WEYWONGY, a high island whose south part forms the north entrance of *Booton Straits*. The passage through those Straits has been entirely refused*, since they have found, that on the outside of the island, the course is equally safe and much shorter.

In

* *M. De Bougainville* passed through these Straits in September 1768, coming from the northward, and describes the passage as follows:

"When you come from the northward, it does not begin to open till you are within a mile of it. The first object which strikes one, on the side of Booton, is a detached rock, hollow below, representing exactly the figure of a galley with her awning spread, half of which out of water is carried away; the bushes which cover it seem to form the tent, or awning; at low water this galley joins to the bay; at high water, it is a little island. The land of *Booton*, which is tolerably high in this part, is covered with houses, and the sea-shore full of enclosures for catching fish in. The other shore of the passage is perpendicular; its point is distinguished by two sections, which form as it were two stories in the rock. After passing the galley the lands on both sides are quite steep, and in some parts even hang over the channel. One would think that the god of the sea has opened a passage here for his swelled waters, by a stroke of his trident. However the aspect of the coast is charming; that of Booton is cultivated, rises like an amphitheatre, and every where full of habitations, unless in such places, which by their steepness exclude men from coming at them. The Coast of *Pangasani* (on the west side) which is scarce any thing but one solid rock, is however covered with trees, but there appear only 2 or 3 habitations in it.

"About $1\frac{1}{2}$ mile to the northward of the passage, nearer Booton than Pangasani, we find 20, 18, 15, 12, and 10 fathoms water, oozy bottom; as we advance to the southward in the channel, the bottom changes; there is sand and coral at different depths, from 35 to 12 fathoms, and after that no ground.

"The Passage is about $\frac{1}{2}$ a league long; its breadth varies from about 150 to 400 toises (of 6 feet French measure each) as we judged from appearance. The channel goes winding, and on the side of Pangasani, for at about $\frac{2}{3}$ of its length, there is a fishery which must be considered as a mark to avoid this shore, and range that of Booton. In general it is necessary, as much as possible, to keep the middle of the gut. It is likewise fit, unless you have a brisk and favourable wind, to have your boats a-head, in order to steer well in the sinuosities of the channel. The current, upon the whole, is strong enough to carry you past in a calm, and even when there is a light contrary wind; but it is not sufficient to overcome a brisk head-wind, and to permit your passing the channel, making short boards under top-sails. When you come out of the gullet, the land of Booton, several isles to the S. W. of it, and the lands of Pangasani look as the entrance of a great gulf. The best anchorage there is opposite the Dutch settlement about a mile off shore.—This station is composed of 7 or 8 bamboo huts with a kind of pallisadoes, decorated by the pole of a tent. There a serjeant and three men reside for the company.

"A fresh and pretty strong breeze at S. E. took us as we made a board upon an isle to the West of Booton; it permitted us to steer W. S. W. and made us gain a good way against the tide. I must here observe that one must take heed of a bank, which runs pretty far out to sea from the isle of which I have just spoken. As we plied in the morning, we sounded several times, without finding bottom, with 50 fathoms line.

"At noon we observed in $5^{\circ} 31' 30''$ south latitude—At 3 o'clock we perceived the south extremity of Pangasani. We had ever since this morning seen the high mountains of Cambona—about $\frac{1}{2}$ an hour after 4 we discovered a part of the land of Celebés. We hoisted in our boats at sun setting, and set all sails, steering W. S. W. till 10 o'clock in the evening, when we stood W. by S. and continued this course all night with ludding-sails set alow and aloft."

In stretching over from Weywongy to gain the passage between the *Xullas* (SHOOL-LAS), and the north part of Booro, the greatest care is requisite to avoid falling to leeward; this has sometimes happened from inattention to the strong southerly currents which at this season (December) run from 20 to 25 miles *per* day. It would therefore be advisable, after leaving Weywongy, to make every effort to gain northing, so as to fetch SHOOLLA-BESSY, whose south point lies in $2^{\circ} 28'$ latitude South. Between it and Booro, whose north-west point is in latitude $3^{\circ} 7'$ South, the passage is 15 miles wide: and the high land of Booro, which appears like a dome, may be seen at 15 leagues distance.

We must repeat in this place, that through the Pitt's Passage the land is seen on both sides. The best track is to keep the small northern islands close on board all the way, till you come in sight of Batenta and Salywatty islands, when you can enter either Pitt's or Dampier's Straits.

From the south point of *Shoolla Bessy* GOMONO island bears N. 70° E. 34 leagues. To prevent falling to leeward between these points, a N. E. by E. course ought to be steered, which will bring you in sight of the west end of Ooby Major.

From Gomono to POOLO PISANG the course is E. N. E. distance 26 leagues. Between them are several small islands lying much in the same direction; all these may be passed very close, and there are no soundings in this track. Poolo Pisang is a small island with two hummocks, in latitude $1^{\circ} 24'$ South.

Poolo PISANG and POOLO POPO bear of each other N. 72° E. and S. 72° W. distance 17 leagues. A cluster of islands between them named *Boo* or *Eplis*, lie nearest to Popo, and nearly in the same parallel. The south side of Popo is surrounded with a number of islands; it has two remarkable hills on the western part, which may be seen a great way; the eastern part being entirely flat. The mouth of the Pitt's Straits is due East of this

"My intention was to fall in with the island of *Saley* 3 or 4 leagues from its north point, that is in $5^{\circ} 55' 06''$ of latitude, in order afterwards to go in search of the straits of the same name, between this isle and that of Celebés, along which you sail without seeing it, as its coast, almost from Pangasani, forms a gulf of immense depth. It is likewise necessary to return in search of the Straits of Saleyer when you pass through the *Tookan-bessis*.

"From the above details, it must certainly be concluded, that course through the *Straits of Boston* is in every respect preferable. It is one of the safest and most agreeable navigations that can be made; it joins all the advantages of the best harbour to excellent anchorage, and to the pleasure of making way at one's ease. We had now as great an abundance of fresh provisions on board our ship, as there had been want before."

These provisions, says M. *De Bougainville* in another part, were sold at a low rate, chiefly poultry, eggs, and fruit, but he advises those who pass this way, to provide themselves, if they can, with the coin which the Dutch make use of in the Moluccas; and especially with the plated; the value of which is $2\frac{1}{2}$ French sous. As the Indians did not know the coin which the French had, they did not value the Spanish reals, nor the French pieces of 12 and 24 sous; and often refused to take them.

island 20 leagues, and Cape Mabo the eastern part of Batenta bears N. 69° E. from it, distance about 23 leagues*.

The west point of Popo and Mysol bear North and South from each other. At this place the Pitt's Passage is the narrowest, being only 8 or 9 leagues wide between Popo and the *Kanary Islands*. These are 7 or 8 in number, and lie to the northward of Mysol; the largest of them in latitude 1° 44' South. Captain *Forrest* found there a good shelter, which he has named *Round Harbour*.

Being to the eastward of Poolo Popo you immediately perceive the high land of Batenta and Salywatty. Between these two islands are the PITT'S STRAITS, (so named by captain *James Detour* in 1760), and called *Sagetoin's Straits* by the Dutch. Their shores are steep, and the tides remarkably rapid, attended with strong eddies, which render them at all times very dangerous, especially if it should happen to fall calm.

DAMPIER'S STRAITS take their name from the celebrated *Dampier*, the first of our countrymen who explored them; they lie to the northward of Pitt's Straits, and between the islands of Batenta and Waygeeo; the Dutch call them *Gamen Straits*. From *Cape Mabo*, the westernmost point of Batenta to *Point Pigot*, on the south-easternmost part of Waygeeo, the distance is 23 leagues. There are no soundings in this passage to the eastward of *Foul Island*, nor any danger whatever, which gives it the superiority over Pitt's Straits; but see at the end of the preceding section the respective advantages and inconveniences of both Straits.

To the south-eastward of Pitt's Straits 13 or 14 leagues, lie the STRAITS OF GALLEWO, between Salivatty island and the western Coast of NEW GUINEA; they are called likewise REVENGE'S, or WATSON'S STRAITS, Captain *Watson* of the *Revenge* being the first Englishman who went through them outward-bound in 1764. They are narrower at the entrance, and afterwards more intricate and difficult than the two others; they open as well as them into that narrow sea, between New Guinea and Waygeeo Island, known by the name of the STRAITS OF NEW GUINEA; these are about 12 or 13 leagues wide, and communicate with the Great Pacific Ocean.

"By whatever passage or Straits," says Mr. *Robertson*, "the Pacific Ocean is entered, the first grand point necessary is to gain sufficient casting, while in a low latitude, to enable you to weather the north Coast of *Luconia* with the north-easterly wind.

"The very great uncertainty and violence of the westerly currents in this part of the Pacific Ocean, and the number of small half-drowned islands dispersed over it, render the navigation thereof extremely dangerous, and makes it hard to determine what the exact quantity of casting should be, as some ships have weathered *Luconia* with much less than others.

* The Dutch Charts give the bearing of Pitt's Straits E. N. E. from Popo Island; and make the distance between the same island and Cape Mabo only 15 or 16 leagues.

" In my opinion all ships coming from Pitt's, Dampier's, or Watfon's Straits, ought to pass, if possible, by the Macassar Straits, and Sangir Passage, after leaving the North Cape of *Moraisy*, (Morinty, or Morty), should stand to the eastward sufficiently, to enable them to get sight of the southernmost *Pelew Islands*; which, in that case, they must pass to the westward."

THE PELEW ISLANDS, known long ago to the Spaniards by the name of ISLES PALAOS, are a very narrow cluster of small and numerous islands, stretching about 28 leagues in length N. N. E. and S. S. W. their west side is circled with a coral reef which in some places extends 5 leagues from the shore. The northernmost of them lies in $8^{\circ} 12'$, and the southernmost in $6^{\circ} 54'$ north latitude. It appears that the dangers bounding those islands to the northward extend up to $8^{\circ} 23'$ latitude North. The Pelew islands are inhabited; the longitude of their center, by lunar observations on board the *London*, 1783, is $133^{\circ} 35'$ East of London.

About 45 leagues to the North of the Pelew islands are the *Matelotas* islands, so named by the *Warwick* in 1761, going to China; from hence to Luconia no other land or danger is seen or known.

REMARKS ON A PASSAGE MADE IN THE SHIP ADMIRAL POCOCK,
FROM MANILLA TO POOLO LAUT, BY THE WAY OF SOOLOO;
IN THE MONTHS OF APRIL, MAY, AND JUNE.

" ALTHOUGH we coasted along the south side of *Mindoro*, I can say but little concerning it; only that with an offing of 5 leagues, no danger is to be found; nearer we did not go, as the wind was mostly at N. E. we could not pass between the northernmost islands off the east end of *Mindoro* and it, because we did not keep *Mindoro* properly aboard; we were therefore obliged to pass between the two northernmost of those islands (called *Cuyo*, from the name of the largest) which though out of the common track, we nevertheless found very safe. The shores of those we passed were very bold, as we had not less than 36 fathoms within a mile of the beach: the ships in company falling to leeward were obliged to go between the southernmost of the *Cuyo* islands, and although they saw the rocks under them for some time, they got through very safe. As we stretched to the eastward we passed the north end of *Cuyo* within 5 leagues; it is of considerable extent, and one of the most fertile of the Philippine islands, producing much rice and other grain. The wind hanging between the North and East, we endeavoured to gain the south-west Coast of the island *PANAY* (it being a weather shore), which we effected; this island lies about 25 leagues to the eastward of *Cuyo*, and is much larger

larger than it; in passing by to the southward we did not sail nearer than 5 or 6 leagues off the shore of this coast, frequently sounded, but never got ground; the land in general is high: before we lost sight of Panay we saw the south-west head land of the island NEGROS about 15 leagues distant, and shortly after a long low island called *Dugamet**; we were at such a distance that I cannot say any thing worth notice concerning either of these.

"About 28 leagues to the southward of Dugamet we saw part of the north-west side of the island MINDANAO, bearing about N. E. by E. to S. E. 10 or 12 leagues, which shore we kept on board with an offing of 3 or 4 leagues (though we could not get ground) till we were abreast of *Alimpapan Point*, the south-west extreme of the island. About 7 leagues to the northward of this point the *Revenge* frigate watered in a small bight, where the shore is so very bold that she almost tailed on the rocks, when she was in anchoring ground. This watering place lies exactly in latitude $7^{\circ} 25'$ North; the people that went on shore did not discover the least sign of human inhabitants.

"From Alimpapan point we steered for the islands that are called the HARE'S EARS, which we saw, when we were a little to the southward of the above-mentioned watering place, bearing S. S. W. about 7 leagues; it makes in two low distinct hummocks. We left BASILAN (a large island), about 7 or 8 leagues to the south-eastward, and got no ground till we were within 4 leagues of the Hare's Ears, when we got 47 fathoms, sand; the Hare's Ears bearing W. by S. $\frac{1}{4}$ S. we had regular soundings close in, viz. from 47 to 35, 33, 28, 27, 25 fathoms, and so on to 13 fathoms, when the Ears bore W. 3 miles: our pinnacle was sent to sound close to the beach of the Hare's Ears and *Peelas*, and found the soundings safely to decrease to 3 fathoms within a pistol shot of it.

"PEELAS is a low island terminating to the southward in a point, but the north end has a high hill on it, which makes it remarkable; it bears about E. S. E. of the Hare's Ears, 4 or 5 leagues: between them, mid channel, is the passage to *Sooloo*; you may go to the westward of the Hare's Ears without all, but it would not be prudent to sail nearer than 5 leagues of it, for fear of such an accident as the *Griffin* met with; nor should you be much farther to the westward of it than 7 leagues, as there are some banks but little known. Between Peelas and the Hare's Ears the tides are strong, and pretty regular, a little North of the Ears is a small island called *Teying*; there is a small island likewise South of the Ears and opposite Peelas; and off its west end there is a reef of rocks, extending near 2 miles from the shore.

"In the channel, I have abovementioned, we had not less than 8 fathoms; when we were abreast of the middle of Peelas we saw the island SOOLOO about 16 or 18 leagues distant bearing S. S. W. From the time we were within 7 leagues South of Peelas till we were within 4 miles of Sooloo, we had no ground. We anchored on the north side of

* This name appears to be wrong; at least no such island is found in the Charts.

Sooloo, where water and provisions are to be got; but the strength and irregularity of the tides, together with the foulness of the ground, do not encourage any one to come to on that side, if they can get round into the road where the Capital is on the west side of the island. In this road you have good anchoring in 9, 10, or 13 fathoms, within a mile of the shore. N. W. of the road 3 or 4 miles lie two or three small islands which afford some shelter, but the road is quite open to a S. W. wind. Here you may get good beef at 10 dollars a bullock; and 3, sometimes 4 fowls for a rupee: it abounds with roots, and all tropical fruits: as the natives are Mahometans there is not a hog on the island; but you have vast plenty of fish in the road. Europeans that go to Soolo cannot be too careful in their connexions with the people; they are so vindictive that they will use the *cris* on the slightest affront.—Thus far on our passage we always found the currents setting to the northward.

“ From Sooloo we sailed between South and S. E. till we got clear of all the Sooloo Islands, the principal of which are *North* and *South Cubingan*, *Seeasee*, *Lepac* and *Tapaan*, all of which we left on our starboard hand; these are all high, except the two last: the Cubingans bore as we passed them N. 80° W. and N. 70° W. We continued our course to the southward, steering for the middle of the straits formed by the Island *Borneo* on the West and *Celebés* on the East; we did not choose to go near the Coast of Borneo until we were in latitude 2° 24' North, as the coast to the northward is little known. We then saw part of it bearing S. W. by W. 6 or 8 leagues; we sounded, but got no ground. In 1° 34' north latitude, we made *Three Rocks* very scraggy, bearing S. W. $\frac{1}{2}$ W. and W. N. W. $\frac{1}{2}$ N. about 7 or 8 miles off; the Coast of Borneo at the same time bore from S. by W. $\frac{1}{2}$ W. to S. S. W. $\frac{1}{2}$ W. 8 or 9 leagues. To this time from our leaving Soolo we had the winds variable and light, the weather in general pleasant; the current strong to the northward. In 0° 30' North, we saw the north end of *Celebés*, bearing N. 70° E. and at the same time the Coast of Borneo N. N. W. $\frac{1}{2}$ W. distant 10 or 11 leagues from each; sounded, but got no ground. We now found the current shift, setting strong to the southward.

“ In 0° 45' north latitude is a headland on Borneo called CAPE GYSSELS. In 0° 51' we saw CAPE TAMOAL on *Celebés* bearing N. 75° E. about 10 leagues: an island at the same time on that coast called the *South Watcher*, bore N. 74° E. 7 or 8 leagues.

“ From the time we were first in sight of *Celebés* till we got into the latitude of 2° 0' South we steered mostly S. W. and sometimes to the westward, notwithstanding we found it difficult to quit that coast, so very strong and constant were the easterly currents. About 2° 0' South we lost sight of *Celebés* steering W. by N. across the straits in order to gain the Borneo shore, which is quite clear, and has regular soundings and tides, with good anchoring ground. In stretching over we made the islands called THE LITTLE POSTILLIONS (*Paternosters*); we saw but 4 islands, which were the northernmost, and appeared very low. We went to the northward of all, and although some draughts do not take notice of dangers about these islands, we saw several very low sand banks,

banks, that cannot be seen off the deck above 2 miles, and some reefs of rocks: these dangers lie to the N. W. of the islands about 7 or 8 miles. The Postillions spread from East to West 16 leagues, which is considerably more than is given them in any draughts.

" After sailing about 7 leagues West from the westernmost of the Postillions, we got ground 30 fathoms, sand and shells; when we had shoaled our water to 19 fathoms we saw the Coast of Borneo bearing from W. S. W. $\frac{1}{2}$ S. to W. N. W. 7 or 8 leagues, the land rather low than otherwise. The soundings from hence to *Poolo Laut* are very regular and good; from 4 to 10 leagues, the depths being in general 11, 13, 14, 16, 18 fathoms; and you will not deepen it to 20 till you have lost sight of the land, unless indeed on some part of the coast where the land is higher than ordinary.

" In $2^{\circ} 13'$ we were abreast of a pretty large river called PANAMMOOKAN; its entrance bore W. S. W. $\frac{1}{2}$ S. of us about 6 leagues distance in 15 fathoms. In $2^{\circ} 17'$ South we saw breakers off the deck bearing S. by E. to S. E. 5 leagues distance; at the same time a long bank of dry sand was seen from the masthead, bearing E. $\frac{1}{4}$ S. 4 or 5 leagues: off the south end of the sand we saw a reef of rocks with breakers on them very high; they appeared to us almost joining to the bank. Borneo at this time was bearing W. S. W. 7 leagues, and we were in 17 fathoms: much about the same time we saw a sand bearing S. by W. 6 or 7 leagues, the southernmost extreme of Borneo in sight bearing S. W. by S. so that I think this sand is not more than 3 or 4 miles from the Borneo shore. By a good observation the sand with breakers lie in latitude $2^{\circ} 21'$ South, about 10 or 11 leagues from the shore; its extent, I believe, is something more than a mile.

" In $2^{\circ} 37'$ South we saw the north end of *Poolo Laut* bearing S. W. by S. 10 or 12 leagues; this part of the island is by much the highest.

" About 15 leagues farther to the southward, we saw a small island from the masthead bearing S. S. W. 7 leagues.—In latitude $3^{\circ} 40'$ South lie three small islands about 5 leagues to the eastward of *Poolo Laut*; a little to the southward of them are two others about a league asunder, and not more than 2 or 3 leagues from the *Poolo Laut* shore: we anchored within 2 or 3 leagues of these last-mentioned islands in 16 fathoms, and lay some time with a strong southerly wind, and a current setting constantly to the northward at near 2 knots an hour: and although we had the south-west extreme of Borneo in view several days, we could not get round it, for here it was we lost our regular tides. Finding all our efforts of getting to the southward vain, it was thought necessary to try for a place to recruit our stock of water before we persevered farther. Our draughts lay down a bay in $3^{\circ} 24'$ South, on *Poolo Laut*, but of which they gave us no account; however, as we were very short of water, we were determined to look in there, and luckily succeeded; as some one or other coming after us may be reduced to the same situation, it will not be improper to attempt to describe this bay.

" It is extremely well defended from all winds, but those between North and East, and so extensive that the navy of England might birth in it: the only precaution necessary in going in is to give the point (which bounds the bay to the eastward) a birth of $1\frac{1}{2}$ mile, at which distance you will round it in 8, 9, or 10 fathoms. When the point is fairly rounded, a small island full of trees will present itself to your view, which is about 4 miles up the bay from the point, and within two cables length of it you have 4 fathoms water: it is surrounded with shoals extending about 30 or 40 yards from it; nothing is to be got on this island nor on the shore near it. The watering and wooding place is over on the west side of the bay, under the highest land, where you may anchor in 6 fathoms $1\frac{1}{2}$ mile from the shore. The soundings, from the point I have mentioned quite across to the watering place, are very regular: the point bears from it E. by S. $\frac{1}{4}$ S. about 5 leagues, and the island above described S. E. 4 leagues. There are numbers of wild hogs, wild deer, and great plenty of oysters; a few oranges (like those of Seville) were found in the woods. We did not see any thing that looked like an habitation. As soon as our water was completed (the wind still hanging from the southward) we attempted a passage between Poolo Laut and Borneo, hoping we might be able to tide it through, if we found it navigable; we succeeded according to our most sanguine expectations, till we got within 3 or 4 leagues of the opening to the southward; there we found so many shoals that all our perseverance was to no purpose; we got aground on an ugly bank in one of our trials, which, with the irregularity of the tides and the great sickness and mortality that prevailed, made us think of looking for a place of proper refreshment; none nearer than Sooloo we knew of that could be gained, accordingly we bore away for Sooloo. But before I describe our voyage back, I shall say something of the inner passage between Poolo Laut and Borneo, in which we miscarried.

" The northernmost point of Poolo Laut, which you must round to get into the straits, is surrounded by a great many rocks, sand banks, and breakers: however you may come within $\frac{1}{4}$ mile of the reef that is off this point, and have $3\frac{1}{2}$ fathoms; the point should not have above one mile birth, for towards the Borneo side there is a large mud bank that extends to the first point of Borneo (from the entrance, and more than two thirds across the straits, towards the Poolo Laut shore), which is quite bold, so that you may come within a cable's length of it for 6 or 7 miles up. The Borneo side is equally bold, after you are past the first point, which presents itself when you have fairly entered the straits. The soundings in the mid-channel are $\frac{1}{2}$, 4, 5 and 6 fathoms, mud. The tides were very irregular whilst we were there; for sometimes it was flood in the middle of the passage, when it was $\frac{1}{2}$ ebb in shore; it sometimes ran 16 hours to the northward, and but 4 or 5 to the southward. About 2 miles farther than we went, is a fresh water river on the Borneo side; our boats were up and down that shore, but did not discover a human track.

" On bearing away from Poolo Laut to Sooloo (in August and September) we did

not see any thing on the Coast of Borneo till we were in latitude $2^{\circ} 20'$ South, then we saw the sand I mentioned in our passage from Sooloo, which lies near the shore. We did not perceive the other dangers because we had the Borneo shore more on board. In latitude $1^{\circ} 35'$ South we were abreast of *Passir River*, up which there is a Dutch settlement frequented by the Macassar people. Hitherto we had the winds, between the South and East, pretty constant and strong. Near the latitude $0^{\circ} 54'$ South off the Coast of Borneo, runs a flat where we shoaled our water from 12 to 5 fathoms, in $1\frac{1}{2}$ miles drift on shore; it lies off a point from which we were about 7 or 8 miles; our boat founded 2 miles within the ship, but had not less than $\frac{1}{2}$ 3 fathoms. After we had passed this flat we did not see the Coast of Borneo again until we were in latitude $0^{\circ} 36'$ North; then we saw Cape Gyffels bearing W. by N. 8 or 9 leagues. Very soon after we saw great part of Celebés bearing from E. N. E. to S. E. by E. 12 leagues; at the same time Cape Gyffels bore N. W. 8 leagues; no ground at 33 fathoms.

“ Ever since we were in latitude $1^{\circ} 0'$ South, the current has set strong to the southward, and the wind constantly been veering from East to W. by S. it being seldom to the northward. We continued in sight of Borneo and Celebés till we got into $2^{\circ} 11'$ north latitude, when we lost sight of the land entirely, and did not see it again till we were in latitude $4^{\circ} 14'$ North. Two islands were descried from the mast-head bearing north-easterly at sun set, which was about 2 hours after the easternmost bore N. by E. and the opening between them bore N. $\frac{1}{2}$ W. 6 or 7 leagues: high land making in three hummocks bore at the same time W. by N. 10 leagues. As we had little or no wind that night, we were set considerably to the westward, for at day-light saw the same islands bearing to the eastward of N. E. and a considerable tract of land appeared to the westward stretching from W. by N. to North: that part which lay to the westward of N. W. was very high. Sand-banks were likewise seen growing circular from West to N. W. and North; there was a small one to the southward with rocks off one end of it, not more than $1\frac{1}{2}$ mile distant, though we had no ground at 100 fathoms. When these sands, &c. were seen we were in latitude $4^{\circ} 25'$ North by a very good observation. It was owing to excessive strong westerly currents, and the light winds we met with, that we got over on this shore; for, as I have elsewhere observed, the east Coast of Borneo is little known to the northward of the Equator. By a lucky breeze springing up from the S. W. we got clear of this ugly situation, but it was two days before we could get out of sight of the islands; and, notwithstanding we steered N. E. and E. N. E. and sometimes East, we in 6 days saw the same land again, so strong and constant were the currents to the westward. Whenever we had wind it generally came in short squalls, chiefly from the S. W. but we had a tedious intervals of calms. Thirteen days after we first lost sight of the sands and islands we again saw them; sometimes after steering N. E. for 3 or 4 days we used to find by our observations that we had lost perhaps 12 or 14 leagues.

" We were almost reduced to a state of despair, when happily a steady breeze sprung up from the southward, at which time the land that bore of us 14 days before W. by N. was then bearing N. W. With this long wished-for breeze we steered E. N. E. and having run on that course 51 miles we saw a considerable tract of land (in some respect like Sooloo) with several little islands near it. We found upon enquiry that the large island is called TAVEE-TAVEE; it bore North 12 or 14 leagues; its south side lies in $5^{\circ} 37'$ north latitude, and bears from Sooloo about W. by S. 20 leagues. The islands and sands we saw are belonging to a chain of them that stretch S. W. from Tavee-tavee to Borneo, in like manner as the Sooloo islands stretch from Sooloo towards Tavee-tavee.

" From Tavee-tavee we stood to the eastward until the west end of Sooloo bore N. $\frac{1}{2}$ W. (it making like a rump) we then hauled to the northward; it is not safe to steer to the northward of East (after Tavee-tavee bears as far to the northward as N. N. W.) until you bring Sooloo to the bearings above mentioned. If it is so thick that Sooloo cannot be seen, you must shut in *Lepac* with *Seea-see*, two of the southernmost Sooloo islands; the former is rather low, the other high; the highest part of Seea-see will bear of you N. by W. when Lepac is shut in, these two islands do not seem above 3 or 4 miles asunder. Your course when these are passed is N. N. W. you may continue steering so till you get in 20 fathoms, which will not be until you are within 4 miles of Sooloo. Then steer W. N. W. for the west end of the island, keeping in 11, 12 or 13 fathoms water; as soon as you have rounded the point, giving it $1\frac{1}{2}$ mile birth, you will see a little island, for which steer; if it has a mile birth it is sufficient (ships have gone within it); about 5 miles farther eastward is Sooloo Road.

" The body of Sooloo island lies in latitude $5^{\circ} 50'$ North."

THE VALENTINE'S INSTRUCTIONS, IN 1761, FOR SAILING FROM GOAT ISLAND,
NEAR LUCONIA TO SOOLOO, AND FROM THENCE,
THROUGH THE STRAITS OF MACASSAR, TO THE STRAITS OF SAPY.

THE ISLAND LUBAN is high, and has several islands and dangers on the east side; GOAT ISLAND lies off its north point; and about 7 leagues to the N. W. of it, is said to be a bank which ought to be taken notice of, as it is laid down in very few draughts.—See page 502.

About S. by W. from Luban lies Point *Calavité*, on Mindoro, in the latitude of $13^{\circ} 25'$ North. Sailing from it you are to steer S. W. about 2 leagues, to pass the first bluff point adjoining to Calavité; and having passed it some distance, you must keep 2 leagues to sea, and from thence steer S. E. by E. coasting the shore at the same distance,

tance, and having got about 8 leagues from Calavité, you will see a large opening in the land of MINDORO, and in the middle of this opening the land is somewhat plain; before you reach it, you will see a point with two small hills, the outermost whereof appears like an island; and from it and the point is the beginning of a bay stretching 2 leagues from point to point; the point on the south-east side of the bay appears likewise to terminate in a low island, though probably it is not one; from it run out the shoals of *Mamburao*, which stretch above a league into the sea.

If it be thought requisite to coast the island more minutely, the following directions may be useful: the course from Point Calavité to PALAON is first South $1\frac{1}{2}$ league; then E. by S. 3 leagues; failing from thence South $1\frac{1}{2}$ league, and then E. by S. will carry you to Tubili and Mamburao.

TUBILI BAY is very deceitful on account of the banks and shoals in it. From thence at the distance of 8 leagues S. E. by S. is POINT DONGON in $12^{\circ} 33'$ latitude north, between which are the Rivers of *Mamburao*, *Santa Cruz*, and *Amnay*. To the west of Point Dongon at $2\frac{1}{2}$ leagues distance lies a shoal called the BANKS OF APO, which runs N. E. by N. and S. W. by S. 7 leagues long, and scarce 2 broad. Within Point Dongon is the bay of USUANGA, called also *Mempong*, from a river of that name near one of the points. This bay is very deceitful and unsafe. The coast from it stretches S. E. by S. to the *Lake of Ilim*. In the same course from the entrance of the Bay of Usunga to the town of Ililim, is a shoal of about 2 leagues in extent. There is a beach of 4 or 5 leagues from the town of Ililim, to the port of *Mangarin*, which port is very safe; at 4 leagues distance from it is the Lake of Ilim made between the islands of that name, and the main of Mindoro, by a river close to the islands, which are three in number, and lie off POINT BURUNCAN, or the south point of Mindoro, whose latitude is $12^{\circ} 7'$ North. The islands lie East and West, the easternmost is the largest; that of Ilim about 4 or 5 leagues in circuit; and close to it on the West is another small one of a league in circumference, called AMBELONG: both are uninhabited, and lie in $12^{\circ} 42'$ North.

The course from these islands is S. E. or to be sure of clearing the shoals, which stretch from the easternmost 7 leagues, it must be S. E. by S. Having cleared them, if you steer S. E. it will carry you in a short time into sight of PANAY, which you will coast steering South as it lies, to POINT NASO, or *Nasog*, in $10^{\circ} 12'$ North, whence the land trenches away to the north-eastward. The north-west point of Panay is named POTOL, and lies in $11^{\circ} 22'$ North; $2\frac{1}{2}$ leagues to the northward of it are two islands named *Carubao*, and to the southward of the point is its bay open to the West, a league wide at the mouth, and 2 in circuit: to the S. W. of Point Potol, close to it, are two islands, and two others off Point Naso.

You may venture 6 leagues off the coast, but not much farther, for fear of the rocks and shoals, there being many in the offing, though none, as is said, nearer than 8 leagues;
but

but it is most eligible to keep within a league or 2 of the shore. The island of Panay in general is very high land; but when you come up with low land, you will be within 6 or 7 leagues of Point Nafu, where is good fresh water.

Sailing from Point Nafu you must steer S. E. which course will carry you to NEGROS ISLAND, 12 leagues from Nafu; and keeping within 2 or 3 leagues of it, you will pursue its direction S. S. E. 4 or 5 leagues, and thence steer South, which will carry you to POINT GALERA*, on *Mindanao*, which is 24 leagues distant, and in $7^{\circ} 55'$ latitude. From the Point of Negros, doubling Point Galera to the S. W. by W. at 1 league distance, is the *Port of St. Maria*, which is 1 league wide at the mouth and 3 in circumference.

Sailing from hence S. S. W. along shore to POINT ALINPAPAN, which is above 10 leagues distant, in $7^{\circ} 8'$, north latitude, you will pass by many towns and rivers, at some of which are harbours. When you are up with Alinpapan point you will see to southward two very high islands, named from their appearance the HARE'S EARS, in $6^{\circ} 45'$ latitude. It will be proper to pass to the westward of them, and the other islands which stretch in a line to *Iolo, Solo*, or SOOLOO, which is very high, and may be seen at the same time with the Hare's Ears. The port of Sooloo is on the west side of the island; opposite to the mouth, about a league distance, are some rocks dry at low water, on which at other times the sea breaks; there is a good passage on either side into the harbour. Somewhat to the northward of the port is another island, and upon Sooloo opposite to it, a small bay. That part of the island on the south side of the port is a high mountain divided by low land from the inland mountains, and to the southward of it is a high island a little distance from the south end of Sooloo. On the north side from the small bay above mentioned is a ridge of mountains.

The proper course from Sooloo is S. by E. or S. S. E. so as to fall in with the north part of CELEBES about *Stroomen Point*, to the eastward whereof is a town named *Bool*, and in it one Dutch man; near here is a rock, with 3 fathoms, on which an English ship struck about an hour after they weighed from a watering place where they lay in 14 fathoms.

POINT STROOMEN is very remarkable by several white cliffs on a point like an island, which at first appeared like great walls. To the westward of this is another point named by the natives DONDO, where there is a shoal bare at low water, stretching near 5 or 6 miles from the point into the sea.

From the north-west point of Celebes it will be proper to steer for AERT GYSENS, or GYSSELS CAPE, on *Borneo*, passing to the southward of the *Six Islands*, which are dry only at low water. To the S. W. of them some draughts lay down *Seven small Islands*, but by the Dutch they are to the north-westward of the *Six Islands*†.

* This must mean *Point Gorda*.

† The *Six Islands* as well as the *Seven Islands* are very uncertain; and their existence is even questioned by several navigators.

The COAST OF BORNEO, from Gysfels Cape to *Pasfir Brava*, forms a large deep bay, and is said to be a bold high shore; from thence the draughts are sufficiently minute for your guidance, sailing along shore till a-breast of *Pannamooking*, or *Pannamookan*; you may then steer South, which will carry you between POOLO LAUT and the *Triangles* (the Three Alike) in a channel with soundings from 15 to 20 fathoms, giving a good birth to some small islands which lie to the eastward of Poolo Laut; the same course continued will bring you between *Nooffa Comba*, called also *Noo Selima*, and *Rotterdam* Islands. A S. E. by S. course from Rotterdam Island carries you through the channel between the PATEN NOSTERS, and Postilions, which is about 20 miles wide, into sight of *Goonong Apy*, though it will be eligible, after passing the channel, to keep a point more to the southward if the winds be westerly.

Goonong-Apy, a high island double peaked at top, is a remarkable volcano which lies about 1 league from the north-east part of Sumbawa.

THE STRAITS TO THE EAST OF JAVA.

STRAITS OF BALLY, LOMBOCK, ALASS, SAPY, &c.

WE have already given general instructions for ships bound to any of these straits, viz. pages 66 and 67, for those who are coming from Europe, and page 518, for ships which, from Poolo Aore, are crossing the Java Sea to pass through them.

The STRAITS OF BALLY, between the island of the same name and that of Java, are the westernmost of all, and their entrance is easily known. *Ballembuang* on the west side of the Straits cannot likewise be mistaken; you may anchor there with *Goningam* South, in 6 or 7 fathoms water: after you get this length it will be very necessary to attend the shift of the stream, so as to take the beginning of it to weigh with, which with the assistance of your boats, though it should be calm, will carry you through. Keep nearly mid-channel, and when you get up with *Gillyboang* you will meet with regular soundings.

"The tides here set stronger," says the captain of the *Osterly*, "than those I have met with in any other straits, having found them to run 6 knots an hour: care, therefore, should be had not to come too close to any of the points, as the tide rounds the bay with great violence, and some ships have been in danger for the want of this attention.

"I have particularly remarked on these coasts, as well as amongst the islands betwixt them and Borneo, before a shift of the stream, a calm has succeeded, which, if properly attended

attended to when there is anchoring ground, may secure what is got, besides preventing danger.

"Passing these Straits for China, I took particular notice of the shoal between *Gilan* and *Pondy*. It is a very dangerous reef covered at high water, but in the S. E. Moon-oon it is at no time very visible. Ships that sail betwixt *Pondy* and *Gilan* must go very near it; and yet the passage is very good on either side the shoal, when it can be seen, or its situation well known. When this reef bears S. 31° E. the south-east part of *Madura* is bearing N. 17° E. and the south part of *Gilan* S. 35° E.

"In turning into the channel, between the islands and *Madura* for *Samanab*, you may stand toward the islands to 13 or 14 fathoms, and toward *Madura* side to 10 fathoms; but you cannot enter the bay of *Samanab*, though you may anchor before it, on the north shore, in 6 or 7 fathoms: you get fresh water, and other refreshments of the Dutch, who have a fort here: close round the point, in the bay there are several springs.

"The *Osterly* anchored in 5 fathoms, blue mud; the south point of *Samanab*, W. 13° S. the point forming the bay of ditto, N. 23° W. the Dutch fort, N. 33° W. the south-east part of *Madura*, East: *Gilan* island E. $\frac{1}{4}$ S. distant from the nearest shore $2\frac{1}{2}$ miles.

"To go between *Pondy* and *Madura*, you must keep the former close on board, it being very flat, for more than $\frac{1}{2}$ over, between both islands; you will not have less than 11 or 12 fathoms within a mile of *Pondy*. In passing *Gilan* island I would not haul up for *Pondy* till I was the length of the west end, and then steer for the point of the island. If you should shoal to 4 or 5 fathoms, as you haul to the island you will deepen."

M. *D'Après*, speaking of the Straits of *Bally*, justly gives the preference to the Straits of *Lombock*, but he only indicates them; and we must have recourse to other navigators for their description.

THE STRAITS OF LOMBOCK are formed by the island of *Bally* to the West, and that of *Lombock* to the East. The south entrance is easily known by the large island, called *Banditti island*, which lies in it, near the west side: the ridge of that island is very like a barn, appearing, at the distance it is first seen, sharp at the top, with the sides chalky like the cliffs of our forelands: off the ends of *Banditty*, as you near it and open the passage between that and *Bally*, in passing to the north-east end, there are many rocks and islots. This island, according to Captain *William Frazer's* series of astronomical observations, is in $115^{\circ} 36'$ East longitude from London, and $8^{\circ} 46'$ latitude South.

The peaks of *Bally* and *Lombock* are another sure mark to distinguish the latter straits from the others; at 7 or 8 leagues from the coast, these peaks are both seen at the same time, when off the entrance. The *Peak of Bally* is a single sharp-pointed mountain, which, when bearing N. by W. is exactly in the centre of the opening of the straits: the *Peak of Lombock*, which is double, bears then N. E. $\frac{1}{4}$ N. and is seen topping
over

over the western highland of the isle. It is situated on the north-east part of it, and may be descried at sea 24 or 25 leagues.

These straits are extremely steep on either shore, and in the fairest and safest passage for any ship there are no soundings. The great rippings you will see in entering are uncommon, and have caused the generality of people to form ideas of rapid tides, which, joined to the want of soundings, and of being liable to be becalmed by the high land, makes them dread apparent danger as real.

The straits of Lombock are short, as the east point of Bally may be seen from Banditti island. There is a flux and reflux, though we are not acquainted with the flowings, nor the time of high water, at full and change: but a ship not hauling too soon round Lombock, and keeping mid-channel betwixt Banditti and Lombock, let the stream be which way it will, there can be no danger; and if it blows, it will soon carry her clear. In light winds it would not be advisable to haul too soon for the Bally shore, till well past Banditti island, and then to round Bally point pretty close, as the shore is bold and very clear.

Left any should be tempted, from the inviting appearance of Bally Bay, without trial of the soundings, to enter it, it is necessary to inform them that the navigator to whom we owe this account is of opinion there is no anchoring for ships. "I sent my boats a sounding about 2 miles from the shore," says this gentleman, "and had no soundings; of which not being satisfied, as I saw several prows in the bottom of the bay, near the shore, I went the day following myself, and not a mile from the shore, on the north side, had 150 fathoms rocky ground, and within a little more than a cable's length 68 fathoms, coral."

Fourteen or fifteen leagues eastward of the Straits of Lombock are the STRAITS OF ALASS; and the shore between them is for the most part a sandy beach, without any visible danger. A few leagues to the eastward of the south-west point of Lombock lies a deep bay or inlet, and off the west point of the said bay are some straggling rocks above water, 2 or 3 miles from shore.

THE STRAITS OF ALASS extend 16 leagues N. N. E. and S. S. W. the island *Sumbawa* bounds them on the East and *Lombock* island on the West: *Sumbawa* is very high and rugged; the inland hills are covered with wood; its south-west point in $8^{\circ} 49'$ latitude South, stretches about 4 or $4\frac{1}{2}$ leagues farther to the South than the south-east point of *Lombock* island, which is moderately high, with white cliffs along the coast for a great way to the westward. This south-west point is very much resembling the South Foreland.

In coming into these straits from the southward, it is best to keep nearest the *Lombock* shore, where you will sooner get into soundings, and much better anchor-ground, than on the *Sumbawa* coast, which is found rocky and steep to all through the straits.

When the south-east point of Lombock bears W. N. W. and the south-west point of Sumbawa S. E. by S. you will then have ground between 64 and 70 fathoms, coarse sand and coral, distance off the Lombock shore $2\frac{1}{2}$ or 3 miles. There, in case of its falling calm, or the tide setting against you, you may come to with a kedge or light anchor, in very fine holding ground. There are soundings a little farther to the southward, and more over to the Sumbawa shore, but very deep water, 80 and 90 fathoms, rocky bottom.

Off the pitch of the point of Lombock lies a small rock above water, not unlike a high canoe without a sail, and distant from the main land about $\frac{1}{2}$ mile. When you come to round the point, you will open a very fine deep bay which the *Vanfittart*, in 1780, called *Lombock Bay*, and where the anchor ground is good, and well sheltered from the southerly wind; they found it to blow very strong through the day, and a very strong tide setting in with it. The soundings are regularly decreasing from 55 fathoms, as you approach the north part of the bay and the Lombock shore, to any depth of water you please, fine, stiff sandy bottom; leaving 5 fathoms two cables length from the rocks, which extend along the shore for several miles to the northward and southward of Bally town; they are mostly dry at low water, and distant from the beach about two cables length: inside of them is a fine sandy bottom, where the large Malay prows lay to take in their cargoes, chiefly rice and paddy, for the adjacent islands. A great many of the nutmeg and cloves for sale were seen there, but it was not supposed they were the produce of the country.

BALLY TOWN is delightfully situated in Lombock island, on the side of a small river, where the *Vanfittart* watered; it was exceedingly convenient for the purpose, having only about 100 yards to roll their casks to where they are filled. The boat may lay close to the beach, if flood-tide, abreast of the place you roll your casks to. Care must be taken however to get without the reef before low water, otherwise you must remain till quarter-flood again.

The ebbing and flowing of the tide in shore is regular, rising in spring-tides 12 or 13 feet; high water on full and change days at $\frac{1}{2}$ past 9 o'clock.

In the south entrance of the straits, the current or tide is very irregular, both in respect to its course and times of shifting; however it is pretty strong, and from 2 to $3\frac{1}{2}$ knots *per* hour. When you are fairly entered into the straits, you have then a regular current setting N. N. E. and S. S. W. all through the straits, but by far stronger to the northward, and generally a great deal longer, than that which sets to the southward.

The inhabitants were a very friendly and fair-dealing people, as any ever met with in the eastern countries, or indeed any where else. The *Vanfittart* was plentifully supplied with bullocks, buffaloes, goats, fowls, ducks, remarkable fine rice, Sago-flour, &c. Fruit of all sorts exceedingly reasonable; buffaloes were 4 or 5 dollars, and bullocks 7.

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The natives were fond of red cloth, muskets, knives, &c. but would not barter their cattle for them: however, cheap cutlery of the large sort is the best and surest article to procure fowls, fruits, or any thing in the small way.

Half-way up the straits lies a low island on the Lombock shore, off which runs out a reef to the south-eastward, about $1\frac{1}{2}$ mile from it. The straits are made narrower at this place by a cluster of islands on the Sumbawa shore, which project a good way out; they are steep to, and tolerably high. In passing *Rocky island*, distant $2\frac{1}{2}$ miles, the *Vansittart* had 35, 36, 37, 40, and 50 fathoms; and when a little to the northward of it, no more soundings on either shore with 100 fathoms line.

No danger is known in these straits but what is visible, "so that it is without doubt," concludes Mr. *Robertson*, "the clearest, safest, and best passage of all the straits to the eastward."

Above 60 leagues to the eastward of the Straits of Alafs lie the STRAITS OF SAPY; the Island of SUMBAWA, Cumbawa, or *Cumbava*, extends in all this space, running nearly in the parallel of 9° South. The coast is all along high double land, except near the middle of it, where there is a low point of trees. Over against this point, inland, is the termination of the great bay on the north side of the island, which almost cuts it in two. The south-east point of Sumbawa lies in $8^{\circ} 33'$ south latitude; it is encompassed with many small rocky isles which must be rounded in going into *Sapy Bay* at the south entrance of the straits.

These straits lie between Sumbawa island on the West, and the Isle of *Ende* or *Floris*, called also *Mangeray*, on the East; they are divided in two by the long narrow island of *Comodo* (*Rotten* or *Rat Island*). On the west side of which are the STRAITS OF SAPY, and on the east side the STRAITS OF MANGERAY*, which are narrow, and very little known. Of the Straits of Sapy we know little more besides Sapy Bay.

The bearings of the *Earl of Mansfield's* anchoring place in this bay were as follows: *Sintodo* point S. 54° E. *Matacot* rock S. 72° E. *Booroobody* island S. 84° E. the extremes of *Galybantia* from N. 70° to N. 89° E. Sapy Bay from S. 25° W. to S. 11° W. the north extremes of Sumbawa N. 20° W. a point of land on Sumbawa, round which they watered, and where there is a small village S. 50° W. the double peaks of *Goonong-apy* in one N. 2° E. distance from the Sumbawa shore $2\frac{1}{2}$ miles, in 30 fathoms water, clear sandy ground. Latitude of the ship at anchor $8^{\circ} 26'$ South; found regular land and sea-breezes; the southerly wind in the morning, and the northerly wind about 2 in the afternoon. The tide ran only $2\frac{1}{2}$ knots where the ship lay; and flows, at full and change, about 1 hour $30'$.

* These lie between the west Coast of Mangeray, and the clusters of small islands to the East of Comodo and to the N. W. of the former. The *Resource* went through them from the southward in August 1789. Captain *William Bligh's* Chart places the south entrance of these straits in $8^{\circ} 48'$ latitude South.

The island of GOONONG-APY, as we have already said, is about one league off the north-east part of Sumbawa. Its double peaked Volcano, one of the most considerable in the Indies, lies in $8^{\circ} 5'$ latitude South, and can be seen at the distance of 24 leagues.

In coming out of Sapy Straits, great care ought to be taken to prevent being horfed to the eastward. The *Mansfield*, with every possible caution, fell to leeward and made the *Toryn Island*, which lies to the southward of Saleyer and 88 miles to the eastward of Goonong-apy.

INSTRUCTIONS FOR THE RETURN FROM THE INDIES TO EUROPE.

By Monf. D'APRÈS.

ALTHOUGH ships can easily at all seasons double the Cape of Good Hope, coming from the westward into the eastern seas, they find not the same facility at their return. The winds from W. N. W. to S. W. that rage violently about this cape, in the months of June, July, and August, and more frequently than at any other period of the year, expose the ships, which attempt to double it at that season, to the loss of a great deal of time in tacking, besides the unavoidable accidents which almost always attend a long continuance at sea in tempestuous weather. Such have been till now the reasons which have engaged navigators in general, when they set sail from the different places of the eastern seas, to calculate the length of their passage to the Cape, so that they should not come to it during the three months which use only seems to have excepted. Nevertheless, when we consider the winds that prevail at the Cape or in its vicinity during those three months, when we compare their strength and their duration, with those which blow in our seas in winter, and during which our navigation is not interrupted, we are justly surpris'd that navigators should be more timorous in the southern seas. I know, by a repeated experience, that the squalls are there very violent, often in whirlwinds, chiefly at their beginning, and that great vigilance is required against them; but after this onset, they become moderate, and when they turn to the S. W. a calm even follows, and that pretty suddenly. As the sea has risen in proportion to the first impetuosity of the wind, its agitation is what you have most to fear; however all these circumstances are not sufficient to hinder navigation.

The best method to follow in general to double the Cape of Good Hope, when the season is far advanced, is to keep the coast at a distance, not exceeding 12 or 15 leagues, nor to approach it nearer than 6 leagues, and that from the moment you make it. By these means you will meet with less impetuous winds than if you had a greater offing; you

you will find also the sea less agitated, and currents always favourable to your course. Many ships coming from the eastward, to pass the Cape, during the months of June, July, and August, have steered in this manner without experiencing any accident; and their success confirms the advantage of this method, which is approved besides by the ablest navigators I have consulted on that subject. You are not to fear to be driven on the coast by the violence of the wind, as it never blows directly towards it, and always permits you to keep from it, or to range it along, at your option.

When you take your departure from MAURITIUS, or from ISLE BOURBON, you should at first direct your course so as to pass 30 leagues wide of that south-east part of Madagascar on which Fort Dauphin is situated. From the latitude of $26^{\circ} 30'$ to 27° you must then make good a W. S. W. course as far as about the Coast of Africa: you will be able even to make the land there below *Point Natal* towards the *River of Infantes*, as well as to correct your reckoning, as to take the advantage of the currents which set rapidly to the eastward. *Westward*

Exclusive of the benefit which ships always find in a direct course, that which I am now speaking of, has the advantage of keeping them, as much as possible, in the ordinary tract of the general winds, and without exposing them, if they should meet with different winds in that part of the Ocean.

When you approach the Coast of Africa near to *Point Natal*, you must not be surprised to find from day to day considerable differences to the southward in your reckoning. I have found them, as well as many others, to vary $1^{\circ} 20'$ in 24 hours. It is to be presumed that these differences were the effect of the currents which, running from the Mozambique Channel and the eastern seas, take their course along the east Coast of Africa.

The soundings we meet with on the coast here being very unequal, and the coast itself being full of shoals in many places, heaving the lead is a very uncertain method to find out your distance off shore: this should induce you to steer with great precaution, when you stand in from the sea. You frequently meet here with fogs which obscure the land, and prevent you from seeing the shore, whilst at the same time you may easily discover the top of the mountains.

After you have made the coast, you should keep along it according to its bearings, at the distance of 12 or 15 leagues, to avail yourself of the currents which set to the westward. Many ships have been so far benefited by them, that they found themselves to the West of the Cape, when by their reckoning they judged to be above 50 leagues to the eastward of it.

These currents are not so strong off at sea, and we know likewise by experience that the winds there are more violent, and the sea runs much higher. It seems therefore more proper to sail near the coast than far from it, provided, however, that you keep at such a distance as not to be exposed to the violent and sudden gusts of wind.

If

If circumstances should not permit you to make the Cape of Good Hope, nor Cape Falso, you should at least steer a course so as to get soundings on the western part of the BANK OF LAGULLAS, to be certain whether you are to the eastward or westward of it. This precaution is in some measure necessary for the course you ought to steer afterwards.

The western edge of this bank stretches out only S. by E. of the Cape of Good Hope: with respect to its south part, as it consists rather of several small banks separated from each other, than one continued bank, it frequently happens that you find no bottom in 36° latitude, though you are still to the eastward of the Cape; consequently the soundings in that latitude become very uncertain means of finding out whereabouts you are; and you must find yourself more to the northward before you should pay any regard to them for that purpose.

Consult pages 51, 52 and 53, where we have given an account of the Bank of Lagullas, the currents off and on the bank, the winds, &c.

REMARKS MADE IN SAILING FROM BOMBAY TO THE CAPE OF GOOD
HOPE THROUGH THE INNER PASSAGE,
OR THE CHANNEL BETWEEN MADAGASCAR AND THE COAST OF AFRICA*.

By M. NICHOLSON.

WE set sail from Bombay, December 16, 1763, and steered along the Coast of Malabar, in soundings from 10 to 40 fathoms; having moderate land and sea-breezes, fair weather, and smooth water. The winds hung more to the southward than ever I knew them, blowing mostly from E. S. E. to S. W. and W. S. W. very uncommon winds on this coast in December.

On the 30th, we joined Admiral *Cornish* in his Majesty's ship the *Norfolk*, in company with the *America* and *Chatham*, off CALICUT, from whence we took our departure (allowing its latitude to be 11° 21' North, and longitude 75° 30' East from London) and sailed through the NINE-DEGREE CHANNEL, with moderate winds in the N. E. quarter. The best latitude to keep in steering through the LAKEDIVAS is 9° 40' North.—See pages 199 and 230.

On the 1st of January 1764, being in latitude by observation 9° 49' North, and longitude, made from Calicut 3° 6' West, saw the island Seuhelipar from the mast-

* See page 91, a description of that channel.

head, bearing N. by E. distance 6 or 7 leagues. The variation was observed A. M. $1^{\circ} 5'$ West. From thence steered to make the land to the northward of CAPE BASSAS, and met with nothing very remarkable, having steady moderate gales in the N. E. quarter, a smooth sea, and pleasant weather. Found little or no current, sometimes a few miles to the northward; at others as much to the southward, in the 24 hours, until we made land.

On the 15th, at $\frac{1}{2}$ past 5 P. M. being then in latitude by account $6^{\circ} 47'$ North, and longitude made from Calicut $24^{\circ} 2'$ West, the variation $10^{\circ} 29'$ West, saw the land of Africa from N. N. W. to W. $\frac{1}{2}$ S. distance 5 or 6 leagues: at the same time sounded and had 50 fathoms, fine white sand. We steered a S. S. W. $\frac{1}{4}$ W. course all the night, which carried us rather off the land; a S. W. by S. course by compass seems to be the along-shore course.

The land hereabout is pretty high, with white cliffs, or sand-hills near the sea, which may be seen in clear weather 8 or 9 leagues, and seems to be pretty bold and clear of danger. The variation A. M. by several observations, was $10^{\circ} 38'$ West: at noon the latitude by observation $4^{\circ} 49'$ North, and longitude made from Calicut $25^{\circ} 20'$ West. This day we found a current which set the ship 19 miles to the southward of the reckoning.

The 16th at 6 P. M. Cape Bassas bore W. by S. $\frac{1}{4}$ S. the northernmost land in sight, North, distance off shore, about 7 leagues; being then in latitude by account, $4^{\circ} 15'$ North, and longitude made from Calicut $25^{\circ} 35'$ West, or $49^{\circ} 53'$ East from London; the variation $10^{\circ} 43'$ West. The course and distance from the land we first made, in latitude $6^{\circ} 47'$ North to Cape Bassas, is S. 25° W. or S. S. W. $\frac{1}{4}$ W. about 57 leagues. This day found the current had set the ship 27 miles again to the southward of the reckoning.

Took my departure from Cape Bassas in latitude $4^{\circ} 10'$ North, ($4^{\circ} 50'$, see p. 148) and longitude by computation $49^{\circ} 50'$ East from London; and found the current along this coast generally setting to the southward, sometimes at the rate of 35 or 36 miles in the 24 hours.

On the 18th crossed the Equinoctial, in longitude made from Cape Bassas, $2^{\circ} 41'$ West. The variation $13^{\circ} 16'$ West.

On the 17th at noon saw the Coast of MOZAMBIQUE very plain from N. W. by W. to West. I imagine it to be very high land, as we were at least 14 or 15 leagues from it, and perceived only the tops of the hills, which appeared like islands. The latitude in, by observation, $13^{\circ} 42'$ South, and longitude made from Cape Bassas $6^{\circ} 50'$ West; Mozambique bearing, by estimation, S. 38° W. distance 38 leagues. Had mostly moderate gales from the N. E. quarter, sometimes E. S. E. and sometimes N. N. W. with fair weather; the current still setting to the southward. The variation increased to $17^{\circ} 4'$ West,

Finding

Finding our reckoning from Cape Bassas to Mozambique pretty exact, took a fresh departure from Mozambique, supposing it to bear as by estimation at noon, allowing its latitude $15^{\circ} 4'$ South, and longitude by computation $41^{\circ} 56'$ East from London.

The 28th, found the current had set the ship 40 miles to the southward of account in the last 24 hours. The winds from W. by N. to N. W. and N. N. E. with some squalls, thunder, lightning, and rain.

The 29th, fresh gales from North and N. N. E. to E. N. E. Hazy weather with some rain, and a large swell from the N. N. E. Found ourselves 59 miles to the southward of the reckoning (supposing this current sets S. W.) the Sun near our Zenith.

The 30th, strong gales and squalls from North to N. E. by N. with a large sea from the N. N. E. Thick, hazy weather, and some rain. This day found ourselves 8 miles to the northward of account. Latitude, by observation, $19^{\circ} 55'$ South; longitude made from Mozambique, $41'$ West.

The 31st, toward evening, had a great sea from the S. E. which thwarted that from the N. N. E. and made a very high confused sea. At midnight came on a violent hard gale of wind, with much rain. The wind from noon to midnight veered round gradually from N. by E. to N. E. by E.—East—E. S. E. and S. E. then the gale was at the height. From midnight to noon the gale rather increased, and the wind veered from S. E. to S. S. E. We were lying under a reefed and balanced mizen, much distressed on account of the ship's being so leaky, that she gained upon all the pumps and bailing at all the hatchways with buckets, &c. At noon it blew very hard, with rain, and a great sea from the S. E.—latitude in, by account, $20^{\circ} 46'$ South, and longitude made from Mozambique $2^{\circ} 11'$ West. We here lost the N. E. trade. From this time to the 3d of February, had strong gales from South to S. by E.—S. by W.—S. W. by S.—S. W. and W. S. W. with cloudy weather; frequently hard squalls; with rain, and a very great sea from the S. E.

This day, the 3d of February, we lost our rudder, which, together with the leaky condition of our ship, made us completely distressed. Latitude in, by observation, $19^{\circ} 52'$ South, and longitude made from Mozambique $1^{\circ} 7'$ West. Found we were set 60 miles to the southward of the reckoning, since the last observation.

From the 3d to the 8th, had the winds from W. S. W.—W. by S.—S. W. by W. to S. by W.—S. by E. and South, mostly fresh gales, cloudy weather, with frequent squalls and rain, and a large swell from the southward. Found the current, for these last 5 days, had set the ship to the southward of the reckoning at the rate of 31 miles a day.

This day got a machine over-board, and steered the ship with it instead of a rudder. Latitude in, by observation, $21^{\circ} 45'$ South, and longitude made 35 East from Mozambique. The variation $24^{\circ} 32'$ West. The next day found the ship had been set 46 miles to the southward of account, and 15 miles more on the 10th.

On

On this day the *America* informed us, that they had seen CAPE ST. SEBASTIAN*; that at 8 A. M. it bore due West 24 leagues; from which bearing I corrected my reckoning, and took a fresh departure, finding the ship $4^{\circ} 22'$ to the westward of the reckoning; from whence I judge the strong current we have found running to the southward must have set to the westward also, so that we were for several days within 20 or 25 leagues of the continent, and consequently passed the Bassas de India a great way to the westward of them. Latitude in, by observation, $22^{\circ} 56'$ South, and longitude $1^{\circ} 25'$ East from Cape St. Sebastian. The variation $25^{\circ} 4'$ West.

From the 10th to the 28th, had a great variety of winds and weather, but mostly from the eastern board, moderate and fair. The current has set chiefly to the southward, of different degrees of strength, from 49 to 7 miles in the 24 hours: sometimes we have not been sensible of any current for 2 or 3 days together; at others we found a small one to the northward, and that but seldom. At noon saw the land bearing N. $\frac{1}{2}$ W. at a great distance. Latitude in, by observation, $35^{\circ} 2'$ South, and longitude made from Cape St. Sebastian $7^{\circ} 57'$ West. Variation $22^{\circ} 54'$ West.

On the 29th, at 2 P. M. the extremes of the land bore from E. N. E. to N. $\frac{1}{2}$ W. and a remarkable high peak N. by E. $\frac{1}{2}$ E. distance 14 or 15 leagues. This land in general seems very mountainous, and some part of it exceeding high. According to our latitude it is not laid down in the Charts so far to the southward, by a great deal, as it ought to be. At noon we were in latitude, by observation, $35^{\circ} 7'$ South, and longitude made, $9^{\circ} 26'$ West from Cape St. Sebastian. Variation $21^{\circ} 40'$ West. Had 70 fathoms, fine black sand. We coasted it in soundings from 68 to 50, 40 and 38 fathoms, distance off shore from 15 or 16 to 7 or 8 leagues. There are many openings to the sea along this coast, which seem to form deep bays; some of them so deep we could not see the land at the farthest end.

March 4th, made CAPE LAGULLAS, (see page 51), which is a low point of land with a gradual slope to the seaward, forming itself in two points: one is running to the southward a long way into the sea, and is the proper Cape Lagullas; the other point, equally low, lies at some distance to the north-eastward of the true cape; the land between them makes a round bight seemingly 3 leagues wide. The coast, from the inner point, turns in with a quick rounding to the northward, and forms a very deep bay; the land to the north-eastward being seen only at a great distance.

When Cape Lagullas and the point before mentioned are in one, bearing N. N. E. $\frac{1}{2}$ N. and the pitch of the Cape N. by E. 4 or 5 leagues, you will then have soundings in 50 fathoms, fine gray sand. Then you may see a very high bluff point of land close to the sea, bearing N. W. $\frac{1}{2}$ N. 9 or 10 leagues; it is the westernmost land in sight, and it appears like a *Gunner's quoin*; this lies from Cape Lagullas N. W. by W. 8 or 9 leagues, and Cape Falso W. by N. $\frac{1}{2}$ N. distance 24 leagues.

* See the note at the bottom of p. 84.

Although Cape Lagullas appears a low point of land, at a small distance from the sea, it is about the height of the North Foreland; and the land within rises gradually to a considerable height. Farther inland are seen very high mountains, but no land near the sea so high as the Gunner's quoin, either to the eastward or westward. Therefore ships descrying the land about this coast at 10, 12, or 14 leagues distance, must of course (as it has been already observed) set the Gunner's quoin land for Cape Lagullas, it being the only land near the sea that can be seen at that distance. When the Gunner's quoin bears N. by W. it does not appear like a quoin, as when you are off Cape Lagullas, but in a very different form.

When Cape Lagullas bears E. $\frac{1}{2}$ N. 7 or 8 leagues, and the land of the Gunner's quoin mountain N. $\frac{1}{2}$ E. 4 or 5 leagues, you will have 50 fathoms, fine sand. The Gunner's quoin mountain (which forms an high bluff point when you are either to the eastward or westward of it) bearing E. by N. and the extreme of the land to the westward (which then seems to be a pretty high steep point) bearing N. N. W. distance off shore 4 leagues, you will have 50 fathoms, coarse brown sand. The land then bearing N. N. W. trenches in quickly to the northward, and forms a bay between it and the land of FALSE CAPE, or *Cape Falso*, so very deep that you cannot see the farther part thereof from the ship's deck.

Standing to the westward in latitude $34^{\circ} 41'$ South, 8 or 9 leagues off shore, opposite this bay, you deepen your water from 50 to 60, 70, and 80 fathoms, sand and ooze, when you are about 6 or 7 leagues to the eastward of Cape Falso. The variation in 1764, was $19^{\circ} 39'$ West. To the westward of this bay, and 5 or 6 leagues East of Cape Falso, the land is very high and mountainous near the sea, with several openings like the entrances of bays or harbours.

On the 6th at noon, HOTTENTOTS POINT bore N. by W. $\frac{1}{2}$ W. distance about 5 leagues; at the same time had soundings in 68 fathoms, muddy ground. Latitude in, by observation, $34^{\circ} 41'$ South, and longitude made $13^{\circ} 31'$ West from Cape St. Sebastian. By the reckoning this day at noon, the ship was 4 leagues to the eastward of Cape Falso, or 10 leagues from the Cape of Good Hope. According to the longitude of the Cape, the true longitude of the ship was $19^{\circ} 7'$ East from London, allowing Cape St. Sebastian in longitude $36^{\circ} 32'$ East from London, and deducting $19^{\circ} 7'$ therefrom, the longitude made from thence should be $17^{\circ} 25'$ West, whereas by the reckoning, it was only $13^{\circ} 31'$ West, which shews that the current had set strong to the westward along this coast, as it generally does.

Hottentots Point, or Cape Falso, (p. 47) is the outermost point on the east side of False Bay; it lies about 6 leagues due East from the Cape of Good Hope, and may be seen 8 or 9 leagues; between them is the entrance into False Bay. At the outer part of the Cape there is an hill, which, when you are to the eastward of it, appears much like the Sugar-loaf hill in Table-bay, and is separated from the other high land; at a small

distance within this hill, there is another of the same form, but not so high. The land near the sea, and about those hills, being very low, makes them conspicuous when you are to the eastward of them; and thereby Cape Falso may be known.

Within the inner hill are very high mountains, one of which is level on the top, and at a distance has some small resemblance of the Table land at Table Bay, which has given it the name of *Falfe Cape*. This has been mistaken for the Table land, and the other two hills, one for the Sugar-loaf, and the other for the Lion's rump: but there is one thing which may at all times convince people of their mistake, the soundings. The outer hill at Cape Falso bearing N. by W. $\frac{1}{4}$ W. about 5 leagues, latitude in $34^{\circ} 40'$ South, we had soundings 68 fathoms, white muddy ground; at the same time the extremes of the land to the eastward bore E. by S. $\frac{1}{4}$ S. whereas with the Sugar-loaf hill in Table Bay bearing so, and in that latitude and distance from land, you have no soundings.

I worked the bearings and distance from the land we first saw on the 29th of February, to Cape Falso W. 2° S. 100 leagues; whereas the Charts make it W. by S. and allowing for the set of the current, during the 7 days we coasted it along shore, 30 leagues more may be added, which will make the distance of the land we fell in with 130 leagues eastward of Cape Falso: allowing 21 leagues for the current (which is in the same proportion) it will make 91 leagues.

The country is every where exceeding high and mountainous, both in land and near the sea; the coast is full of large and wide openings as above mentioned. The soundings are very regular every where to the eastward. Where we first made the land, you have 65 fathoms, at 14 or 15 leagues; and 46 or 47, at 8 or 9 leagues off shore. About Cape Lagullas you have 57 or 58 fathoms, 7 or 8 leagues from the coast; and about 5, 6, and 7 leagues to the eastward of Cape Falso, 60 and 64 fathoms, muddy ground, are found 5 or 6 leagues off shore.

In the offing, Cape Lagullas bearing by estimation, from N. E. by N. to North, about 18 or 20 leagues, in latitude $36^{\circ} 3'$ South, you have soundings on this bank from 75 to 80 fathoms, fine gray sand; and 12 or 15 leagues to the eastward of that, (the variation $20^{\circ} 39'$ West, 1764), 90 fathoms, brown muddy sand. In this latitude the bank runs but little farther to the eastward; for in 8 or 10 leagues you have no soundings.

In the opening of Falfe Bay you have 54 and 56 fathoms, muddy ground; Hottentots Point, or Cape Falso bearing E. N. E. and the easternmost part of the Cape of Good Hope N. W. $\frac{1}{4}$ W. 3 or 4 leagues; in latitude $34^{\circ} 25'$ South, and variation $19^{\circ} 30'$ West, 1764. About 3 or 4 leagues farther off shore you find 64 and 70 fathoms. The bank does not stretch far off the coast hereabout.

As you run to the westward toward the Cape of Good Hope, you will shoalen your water from 68 to 60, 55, and 54 fathoms, muddy ground; in which latter depth Falso

Cape bears East, distant about $3\frac{1}{2}$ leagues; and the very pitch of the Cape of Good Hope (which is the southernmost point of land on the west side of False Bay) N. W. about 3 leagues. On the pitch of the Cape, or very near it, is a very high peaked hill, rugged and rocky, something in shape like the Sugar-loaf hill, but not so high, and with no other high land near it.—Within the entrance of False Bay you have soundings from 40 to 36 fathoms, sandy ground, sometimes mud. The pitch of the Cape of Good Hope bears, by compass, from the pitch of False Cape W. by N. $\frac{1}{2}$ N. so that, allowing the variation, they bear due East and West of each other, in latitude $34^{\circ} 25'$ South, and 6 leagues distant.

The Dangers to the southward and eastward of the Cape of Good Hope are described in pages 55 and 56, which you are to consult.

INSTRUCTIONS FOR SAILING FROM THE CAPE OF GOOD HOPE TO THE ISLANDS OF ST. HELENA AND ASCENSION.

AS soon as you are clear of the land near the Cape of Good Hope, steer a N. W. course for St. Helena; this will soon bring you into the S. E. trade-wind; and in the fair weather season, you generally have fresh steady gales from the south-eastward all the way.

"It has been too much the practice," says Mr. *Nichelson*, "in observing the variation of the compass at sea, not to be so exact as could be wished. The exactness of this observation is of much greater utility than correcting the course by the common method of sailing; and if nicely taken answers all the ends of longitude in navigation, particularly where the increase and decrease are quick.

"It is my opinion, that sooner or later, there will be some very important discoveries made by the variation of the compass; so I hope there will be more attention paid to the variation for the time to come than hitherto has been.

"In steering to the north-westward, you will rather decrease the variation, for, in latitude $32^{\circ} 40'$ South, and longitude made from the Table land $1^{\circ} 24'$ West, we had (in 1764) $19^{\circ} 35'$ West. In latitude $31^{\circ} 30'$ South, and longitude made 3° ditto, had $19^{\circ} 25'$ West. In latitude $29^{\circ} 50'$ South, and longitude, westing 5° , had $18^{\circ} 42'$ west variation, which decreases gradually as you run toward St. Helena.

"In the parallel of that island, and $3^{\circ} 10'$ eastward thereof, we had $13^{\circ} 42'$ west variation; about 2° to the eastward 13° or $12^{\circ} 55'$ West; $1^{\circ} 20'$ to the eastward, $11^{\circ} 50'$ West; and in St. Helena Road $11^{\circ} 38'$ West."

St.

ST. HELENA * is situated in the midst of the Southern or Ethiopic Ocean, and is the most distant island from the continent of any in the known world; the extreme length of St. Helena is not more than 9 miles, and as its figure is nearly circular, the utmost of its circumference cannot be more than 26 or 27 miles. All the East India ships touch here in their way home, and cautious of missing so small a spot, they fall into its parallel of latitude, about 50 or 60 leagues eastward of it, lie by all night, for fear of running past, and when day appears steer due West till they make land.

St. Helena lies in a most temperate and agreeable climate; the S. E. trade-wind blowing there the whole year renders the air always cool, pleasant, and healthy. They are exempt from thunder and lightning, and the island is refreshed by light flying showers which produce a quick vegetation as well as a continual verdure; though sometimes the want of rain is such that all this verdure disappears.

It affords a dreary and most uncomfortable prospect from the sea, of high craggy rocks, many of the summits hiding themselves in the clouds, and many projecting over their bases.

The only two landing places are at *Rupert's* and *James's*, or *Chapel Valleys* †. In Rupert's Valley, toward the sea, stands a strong fort well mounted with heavy cannon, but the Valley is not habitable, because it has no water. In the entrance of James's Valley stands *James's Town*, the residence of the Governor. It lies in $15^{\circ} 55'$ latitude South, and $5^{\circ} 45'$ longitude West of London: its fort defends the Valley by a very fine line of 32 pounders, and is flanked by a high inaccessible battery upon the rocks called *Mundens*, close under which all ships must pass that come to an anchor before the town. On each side of this valley is a row of very handsome slated houses which form a regular pretty street, and at the end is a pleasant walk of near $\frac{1}{2}$ mile in length, between a vista of trees which are always green and blooming. On the left is an inclosed square for the soldiery; and the walk terminates in an enclosure belonging to the company called *Maldivia Gardens*, in which are great numbers of plantain trees, yams, &c.

On the right side the valley is entered by a high steep promontory called *Ladder-bill*, the height of which cannot be much less than 800 feet; however a winding road has been contrived to ascend it, which, though not without difficulty, is yet safe, having a

* St. Helena having been settled by the English East India Company in the last century; the Dutch took it in the reign of Charles II. and it was retaken in 1673 by captain *Munden*. This commander was knighted at his return, and the property of the island vested in the crown, by conquest; when his Majesty was pleased to grant it to the East India Company.

† There is besides these two landing places, a small place called *Sandy Bay*, where boats in very smooth water might possibly land; but this is defended below by a battery of cannon, and by the heights overhead, from which a body of men called the Flying party, would with small arms, and by rolling down large pieces of rocks, infallibly destroy any who had the temerity to make the attempt.

wall on the side next the precipice, and the inhabitants of both sexes commonly ride up it on horseback.

On the left of the valley, a handsome road, in which two carriages may pass a-breast, forms the other avenue to the interior parts of the island. This passage, which has been made with great labour and difficulty, goes with an easy ascent traversely to the level above, where the prospect is striking and delightful; from a sterile, brown, barren rock you view the most lively verdure; beautiful lawns, with sheep and cattle feeding in different places, and interspersed with small houses, which have generally a large enclosure laid out into gardens. This view is terminated by a distant prospect of the sea, or by high rocks, heaped, as it were, one upon another to a stupendous height. The plain called *Long Wood*, containing more than 1500 acres of ground, forms another point of view, and the whole is rendered still more pleasing by a small winding stream, which falling from the heights into the valley makes a delightful cascade.

The number of soldiers upon the island is small, consisting but of 4 companies, which, with the artillery-men, never amount to more than 400 men. This force is far from being sufficient for the defence in case of an attack; but every man on the island, without exception, is trained to arms, and proper parties appointed to alarm-posts, which they occupy with great alertness, whenever the customary signals are made for that purpose.

On the summit of one of the heights is built a convenient look-out-house which has two cannon near it. When a ship is first descried the two guns are fired; and this is called a single alarm. If two sail are seen three guns are fired, which is a double alarm. Immediately the drums beat to arms, and every body takes possession of the different posts assigned them. A gun more is fired for each ship that is seen till the number of five, which is the signal for a fleet. Every one remains under arms till the governor is acquainted by the ship's boat who she is, and then the drums beating again, dismiss the people to their respective avocations. In the whole island there may be about 160 families; and these have among them about 300 slaves exceedingly serviceable to their masters, who live in great comfort and tranquillity.

All ships in approaching the island bring to to windward, and send their barge ashore to the castle, with an officer to report their nation and business, and obtain the governor's permission for anchoring there. Without this all the batteries would fire upon them in their approach, and it would be very difficult even for a number of men of war to force a passage.

James's town is situated in the most leeward part of the island, so that ships in coming in are obliged to keep close under the land, by which means their decks are entirely exposed to the battery above. Another disadvantage is that of eddy winds, calms, and violent gusts, which lay them almost on their broadsides; so that the natural strength of St. Helena is alone almost sufficient for her safety.

The

The inhabitants, remarkable for the mildness of their manners, are polite without grimace, honest without affectation, sincere in their professions of friendship, and extremely hospitable to strangers.

A ship bound to this island must run down along the north side of it, within half a cable's length of Sugar-loaf point, and afterward keep the shore close on board within a cable's length: there is no danger, the shore being bold and steep to. On the west part of Sugar-loaf point stands a small fort, and a little to the southward of it is Rupert's valley: the next point to the southward of the valley is Munden's Point, which must be kept close on board; and the next valley is James's valley, off which is the place of anchoring.

You may anchor in from 8 to 15 fathoms. The flag-staff at the fort bearing from S. S. E. to S. E. by S. Sugar-loaf point N. E. by E. and Horse-pasture point S. W. by W. $\frac{1}{2}$ W. distance off shore about $\frac{1}{2}$ mile: with these bearings you have good and convenient birth for watering. This bank runs out to the westward, from the fort about $1\frac{1}{2}$ mile, and deepens gradually from 7 fathoms near the shore, to 30 and 35 for about $1\frac{1}{2}$ mile, when it deepens suddenly to 60 fathoms, and then no soundings. The bottom in the road is coarse sand and gravel. You find no soundings till you come abreast of Rupert's valley, and then you have 18 or 20 fathoms.

The great quantity, as well as the richness of fine pasturage diffused over the face of the whole island, make beef and mutton extremely plenty; another reason for which is the quickness of their growth, the oxen being generally killed at two years and a half or three years old, and are then equal in size and goodness to English oxen of five years. They have abundance of poultry, also plenty of good potatoes, yams, and other vegetables.

As ships meet with good refreshments at St. Helena, their sick speedily recover from the scurvy. Here is plenty of good water, but wood is rather a scarce article. One watering place is just without James's fort, where there is a crane to strike the casks into the boat; the other is at Lemon valley, where is the best water, and you fill the casks in your boat with an hose: only it is a little farther to fetch it.

After the flattering account we have given of St. Helena from an observer perhaps too partial, it will not be amiss to insert the description which Captain Lesley of the *Orford* man of war, who was there in 1775, has inserted in the journal of his navigation.

"This well known island," says the captain, "stands in the middle of the great Ethiopic Ocean, a monument of our ancient folly in receiving it *in exchange* for the Cape of Good Hope*, from the foreseeing crafty Hollanders.

"It is all mountains and deep valleys, but parts of it are rendered fertile by cultivation. The only *accessible* place round the whole island is the bay you anchor in, where, in a

* See the note at the beginning of this section.

little hook, which they call a valley, stand the fort and town. The inhabitants have in general a house here, but their principal residence is in the country at their several plantations.

" The climate of this island is the finest in the world, but then that very excellence brings with it the greatest inconvenience ; for sometimes for want of rain (twelve months perhaps at a time) the inhabitants lose all their stock ; the whole island being burnt up, and all vegetation destroyed. They are besides so plagued with rats and mice that a crop of any thing in the fields or gardens is never secure till it is gathered : this discourages all culture ; and planting has the same disadvantage by the number of wild goats which crop off every young tree as soon as it appears : was it not for these circumstances the number of inhabitants that are on it might live very well. This is not the case now with any but the governor, deputy-governor, and a few others, who have the first choice of all provisions in the market. The soldiers and bulk of the inhabitants live on fish, salt meat, yams, and potatoes. They cannot have any stock of poultry for want of grain to feed them with ; was even this article plenty they might be tolerably well off ; but by the deprivation of trade and the circumstances before quoted, this cannot be. It is from the sea all round the most barren, horrible looking place in the world.

" The inconveniences I have mentioned, with that of having but one ship in a year from Europe to supply St. Helena with all sorts of necessaries, and the parties constantly subsisting among the inhabitants, make it, in my opinion, a very disagreeable place to live in. India commodities of all kinds they can easily get, such as tea, silks, &c. &c. But then where is the money to purchase them ? Very few are, or can be, in the way to get it. The India ships, on their return home, stop here in peace time, from 5 to 10 days ; in war they generally wait for a convoy.

" It is well garrisoned, and very strongly fortified, nearly impregnable. The female sex are reckoned very handsome, and indeed the natives look full of health and good spirits, I apprehend from the pureness of the air and their temperate lives." And what could they have more, I will ask captain *Lesley*, if there were neither rats, mice, wild goats, governor, deputy-governor, &c. in their small and solitary island ?

Though the limits of the general winds never extend beyond 28° or 29° south latitude, yet after you have doubled the Cape, you sometimes meet with south-easterly winds, which blow constantly, and without any sensible intermission ; so that in this track you may even flatter yourself with the hopes of their continuing favourable for crossing the Line.

If you should happen to meet with different winds in that vast extent of seas, which are the proper region for general winds, such winds are of a very short duration, and only occasioned by some accidental cause. " In the month of May, 1735," pursues M. *D'Apris*, " at my return from the Indies in the ship *La Galatée*, we met with winds from

from N. W. to North in this track, between the 24 and 22° of latitude South, which held us from the 12th of the same month to the 18th."

Between the Island St. Helena and the island Ascension the S. E. trade wind blows all the year long, fine, steady, pleasant gales; and mostly fair weather. The variation decreases very gradually between the two islands: in the latitude of Ascension, and $1^{\circ} \frac{1}{2}$ to the eastward of it, Mr. *Nichelson* in 1764 found $10^{\circ} \frac{1}{2}$; about 1° to the eastward $9^{\circ} 52'$, and at Ascension $9^{\circ} 48'$ west variation.

The island of ASCENSION, 225 or 250 leagues to the N. W. of St. Helena, is about 3 leagues from North to South, and not more than 2 from East to West; it can be seen 10 leagues in clear weather, and is evidently like St. Helena, formed or burnt by a volcano: it is covered with a reddish earth not unlike brick-dust, or burnt-loam; in some places there is a yellow earth like oker, and in others, chiefly in the valleys, a fine black earth. The island is composed of several hills 2 or 300 yards in height, except one in the south-east part which is about 800 yards high; this is called the *Green mountain*: its top is double and rather peaked; but all the rest are of a pretty regular conic form, and covered with red earth. The earth as well as a great part of the hills are strewed with a prodigious quantity of rocks full of holes, calcinated stones very light, and pumice stones. The rocks lying upon each other in a very irregular way, and mostly on the declivity of the hills, leave great chasms between them; and as they have very little solidity, an observer runs some risque who ventures without caution upon them. The prospect of these hills, and in general of the whole island, is frightful to behold.

About the middle of the island, and between the hills, there are several little plains, which are divided into small spaces so remarkably distributed that you would take them for so many pieces of land cleared of stones and separated from each other by long walls.

There are neither springs nor streams in this island; at the foot of the Green hill however water is found in some hollows, but it evaporates in a few months.

The surface of the island appears totally naked and barren. "I have not seen there," says *Abbé de la Caille*, "any signs of trees or shrubs. I have found only four kinds of plants, which are thinly scattered here and there. The first is a kind of purslane of a very good sort. The next is a milk-thistle whose stalk becomes pretty hard in drying. The third is a species of gramen whose leaf is very narrow, long, and a little indented like the shave-grass. The fourth, which grows only in the sands near the sea shore, is a kind of convolvulus." This shore is made of very hard black rocks, which do not appear to have been calcinated, or of beaches whose sand of various colours is visibly the pulverisation, more or less complete, of the shells.

There are a great number of wild goats, which are very lean, of rats and mice, and some few insects.

Ascension island, without water and wood, is only frequented on account of its turtles. "Of this article," says captain *Lesley* (February 1775), "the island furnishes the finest in the creation; the females from, I suppose, hundreds of leagues round, come here to lay their eggs, on which employment they are taken at night; so that they are not only fat and large but in the highest perfection for eating. Their weight in general is from four to seven hundred pounds. We took of them in four nights upwards of one hundred; the *Prudent*, the ship that was with us, took more; so that our squadron of 4 ships of the line had as much turtle as, if they live, will serve us a month for the ship's crew. They are, of all I ever tasted, the fattest and finest; all others I ever saw before bear no comparison with them.—I must observe that the rats were very troublesome to our turtle-parties, eating their provisions, and killing the turtle after they were turned.

"It is said," continues the same gentleman, "no person ever could find water on this island, except just some unexhaled rain water in the crevices of rocks accessible only to the goats, and that it must be what kept those animals alive. But I am of opinion that were proper instruments taken to dig a sufficient depth, there must be water at the foot of the valleys; for surely all the water that falls from the clouds in rain and dews cannot be exhaled, some must be absorbed by the earth, and sunk to the bottom. Though I believe there is very little rain here, yet there is always clouds hanging over the highland, and the center mountain (the Green mountain) is generally enveloped in one. The truth is no person ever dug farther than a common spade or shovel would go; and on finding no water 8 or 10 feet deep, gave up the point: but surely 20 or 30 feet deep there must be water. Had I had time I would have tried this, for my opinion is, where there is so large a piece of land, there must be water at some depth or other. I propose to dig a well, and if the India Company thought it of any consequence to their ships, to try it by sending some ships with proper instruments in the *St. Helena* store-ship.

"But Ascension can never be inhabited by man, for want of soil; the whole island, both mountain and valley, being one entire cinder, just as if it was newly spit out of a vulcano; so much the better, for a well is all that could be wanted, and settling it would be fatal to the poor turtle, which, I hope, will at least have this place left."

A ship bound to Ascension island must sail down along the north side of it, keep it close a-board, it being bold and steep to, and continuing to keep it so when she comes to haul up for the road. You may sail withing 2 cables length, or less of it, there being no danger, till you bring *Cross-bill* on the middle of Sandy Bay. This hill stands by itself, and has a cross upon it, from whence it took its name.

Sandy Bay is about $\frac{1}{4}$ mile deep, and about $\frac{1}{2}$ wide. The westernmost point is dangerous on account of a reef of rocks stretching from it about a mile from the shore,

and on which the sea breaks in bad weather: therefore care must be taken not to go too near it*.

The anchoring place is on the north-west side of the island, off Sandy bay; a good mark for anchoring is to bring Cross-hill on the middle of Sandy bay, when it bears S. S. E. $\frac{1}{2}$ E. and the extremes of the island from N. E. $\frac{1}{2}$ E. to S. W. $\frac{1}{2}$ W. then you will be in 10 fathoms water, and about $\frac{1}{2}$ mile off shore. The bottom is sand and gravel, clear ground, and this is as good a birth as any in the road. The hold is good, and there is no danger whatever, as the wind always blows to seaward. There is a great surf upon the shore, and the landing is troublesome.

The middle of Ascension Island lies in $7^{\circ} 52'$, and the road in $7^{\circ} 56' 30''$ latitude North; and its longitude West of London is $13^{\circ} 54'$, according to an observation made by *Abbé de la Caille* in 1754; or $14^{\circ} 22' 31''$, according to Dr. Maskelyne's tables.

INSTRUCTIONS FOR SAILING FROM THE ISLAND OF ASCENSION TO EUROPE,

PONEDO OR ST. PETER'S ISLAND—CAPE VERD ISLANDS—THE
AZORES—VIGIAS OR DANGERS, &c.

THE course, says M. D'Après, kept by vessels at their departure from Ascension island, in their return to Europe, appears to be rather founded on the prejudice of some navigators, or the habitual practice of many others, than adopted in consequence of a knowledge of the passage they are to make, and of the winds which they are certain to

* There are some other detached rocks in the bay, on one of which the *Egmont* struck, as appears by her journal.

" At $\frac{1}{2}$ past 12 P. M. saw the island Ascension bearing W. by N. $\frac{1}{2}$ N. distant 9 or 10 leagues. At 7 ditto came to with the small bower, in $\frac{1}{2}$ less 9 fathoms, Cross hill S. S. E. veered to $\frac{1}{2}$ a cable. At 10 A. M. the next day weighed, being too near in, and dropped into 12 fathoms water. At 6 P. M. in standing along shore had the misfortune to strike on a sunken rock at the distance of about 2 cables length from the shore. We continued striking without going a-head, though all our sails were set and full, for 8 or 10 minutes: at last she came to against the helm, upon which we braced all a-back, and she went off stern foremost. As soon as a-float she began to make water, and now makes 12 or 13 inches an hour.

" In the morning I sent my chief officer to sound upon the rock and take its bearings, &c. He brought me word that it is a *small Spiral Rock*; on the shoalest part he had $\frac{1}{2}$ less 3 fathoms, on one side of the boat, and 13 fathoms on the other, toward the head and stern of the boat $4\frac{1}{2}$ and 5 fathoms; she then laying along shore. From the rock to the shore, almost close to, no less than 13 fathoms, white sand, close to the outside of the rock 13 fathoms, and in a very little way, no ground: the space it occupies is not above 5 or 6 feet any way. When on the rock, the cross on the hill bore S. W. $\frac{1}{2}$ S. distance off shore about a cable's length and a half."

find in that passage. Some of them will steer N. W. by W. as far as the Line; others are satisfied with a north-westerly course, either because they have always done so, or have seen it done by those who went before them. It has been shewn already that the opinion of the former, who believed the winds would be found there more brisk and durable, is not in the least justified by experience; as to the others, I think, and many more are of my opinion, that the ancientness of any practice does not excuse us from the attempt of doing better.

Why should you lose 150 leagues to westward, which you are afterwards obliged to fetch up again by plying to eastward? If you intend to pass westward of the Cape Verd Islands, which lie N. N. W. of Ascension, it is much better, in leaving this island, to shape your course N. N. W. up to 5° latitude North, and from thence N. W. by N. This point will carry you 40 leagues at least of the westernmost of the Cape Verd islands; and you must keep a good look-out as you draw near their latitude, to guard against any unforeseen errors in your reckoning. As this precaution is often taken against imaginary dangers, there is a stronger motive to adopt it in this case. Besides, should you get sight of any of these isles, you will have the advantage of correcting your estimation of longitude.

You must take particular notice, that the southernmost of the CAPE VERD ISLANDS are laid down in several Charts as erroneously as those which lie to the northward. Brava island is placed in $15^{\circ} 10'$ latitude North, instead of which, with respect to Fogo island and the road of Praya (the latitude of which I have observed), it ought to be in no more than $14^{\circ} 36'$, which amounts to an error of 34 minutes.

If, notwithstanding the most advantageous disposition of the track here recommended, you should, by keeping more to the westward find yourself near the PONEDO or ST. PETER'S ISLAND, it is necessary you should be acquainted with its situation. This small island has been seen by many ships, and by the ship *le Rouillé* in particular, March 1st, 1750, which lay to, for two days, in sight of it. According to their observation, it lies in $55'$ north latitude, though others have judged it to lie in about $1^{\circ} 10'$ or $20'$. When you perceive it 5 or 6 leagues off, it has the appearance of 3 separate rocks; but as you come near it, you find them to be joined together, by very low land covered with small trees.

The ship *le Curieux*, commanded by M. de Landeneuf, a very able and experienced navigator, was sent in 1768 on purpose to explore this island, which was supposed by some to be covered with wood, and of an easy access. He found that it consisted only of a heap of steep rocks covered with birds dung, without verdure, and round which there was neither anchoring place, nor convenient landing place.

"All the tracks of those vessels which have made Ponédo, after their departure from Ascension, place it $12^{\circ} 40'$ West of the latter, and consequently $31^{\circ} 25'$ West of London."

When you are to the westward of the Isles of Cape Verd, you will continue to avail yourself of the variable winds which are met with afterward, in order to pass to the westward of the Azores, or between those islands. It is needless to attempt passing to the eastward of them, with a view of shortening your passage, since the N. E. winds, which are frequent in this part, would on the contrary lengthen it.

These instructions of M. D'Après for the course from Ascension island to the Azores will be rendered more useful by the following extract of Mr. Nicbelfon's journal of the same navigation.

Having sailed (1764) from Ascension, we crossed the Line with $7^{\circ} 56'$ west variation, and longitude made from Ascension $6^{\circ} 11'$ West. Had the S. E. trade wind, fresh and steady gales, to latitude 3° North. From 3° to 5° North, had mostly light winds and variable, from S. E. to N. E. with some few calms. In latitude $5^{\circ} 21'$ North, and longitude made from Ascension, $9^{\circ} 10'$ West, variation $6^{\circ} 50'$ West, we met with the N. E. trade-wind, which continued, fresh and steady gales, to latitude $28^{\circ} \frac{1}{2}$ North.

Notwithstanding the few calms we met with, and the quick change of the trade-winds from S. E. to N. E. all this may have been merely accidental. Several ships have crossed the Line with nearly the same variation as ours, consequently as far to the westward, and about the same time of the year, and they have met with the same kind of winds as we. Yet this is not sufficient to make it a general rule for crossing the Line so far to the eastward, especially if the Sun is on or near the Line; because from 5° of either latitude, you are liable to meet with calms, more eastward toward the Coast of Guinea. Experience has proved, that the farther you go to the eastward on the Line, and under 5° of either latitude, the more subject you are to calms. Therefore the rule which holds good in crossing the Line outward bound to India will obtain equally when homeward bound; and that is to cross it in the first case with about 7° or $6^{\circ} 30'$ west variation, which is nearly in the Meridian of St. Yago; and in the second, not to cross the Line with more than 8° west variation, where you will be less exposed to calms. Observe that the present variation at the Equinoctial is half a degree more than that which is mentioned by Mr. Nicbelfon, who continues thus:

I have passed to the westward of the Cape Verd islands in latitude $16^{\circ} 5'$, which is about the parallel of Bonavista, with $4^{\circ} 4'$ west variation, longitude made from Ascension $19^{\circ} 56'$ West, or about 12° to the westward of Bonavista. I have also passed the latitude of St. Anthony, the northernmost and westernmost of the Cape Verd islands, with $3^{\circ} 37'$ west variation, longitude made from Ascension $20^{\circ} 48'$ West. This was the lowest longitude I had in this passage; reckoning we were then about 10° to the westward of St. Anthony; thence it increased as we ran to the northward.

In latitude $28^{\circ} \frac{1}{2}$ North we found the N. E. trade-winds began to decrease: they first moderated, then turned to little winds and variable. From 29° north latitude to 30° the

the winds veered from the E. N. E. to S. E.—South, and S. W. in which quarter they mostly continued. In this former latitude of 29° and longitude, made from Ascension, $23^{\circ} 10'$ West, we had $6^{\circ} 30'$ west variation. In $38^{\circ} 40'$ North, which is pretty near the latitude of Fayal, one of the Azores, and longitude made from Ascension $22^{\circ} 8'$ West, the variation was found $12^{\circ} 44'$ West, supposing we were then about 8° to the westward of Fayal, and $5\frac{1}{2}$ to the westward of Corvo.

Corvo * is the westernmost of the AZORES (i. e. *Hawks*) or WESTERN ISLANDS. According to the observation of Messrs *Pingré* and *De Fleurieu* in 1769, it extends between $39^{\circ} 25'\frac{1}{2}$ and $39^{\circ} 35'$ latitude North; its western part lying in about 31° west longitude from London. It is separated from the Isle of *Flores* by a channel near $4\frac{1}{2}$ leagues wide. These two islands have nothing remarkable, they are of a moderate height, intersected with hills, and may be seen 10 or 12 leagues in clear weather. But the surest mark is their latitude, and their detached situation, which does not permit you to confound them with any other.

Fayal extends between $38^{\circ} 31'$ and $38^{\circ} 42'$ latitude, and $28^{\circ} 22'\frac{1}{2}$ and $28^{\circ} 34'$ west longitude.

The Peak which gives the name to *Pico* island, is in $38^{\circ} 30'$ latitude and $37^{\circ} 14'$ west longitude. The summit of this mountain, whose sides are neither very steep nor uneven, is terminated by a small sugar-loaf, so very regular that one should think it has been made by art. The height of the peak above the level of the sea, according to the trigonometrical observations of the French astronomers, is 1100 French toises (about 2,400 English yards), and consequently in clear weather it can be seen 24 or 25 leagues at sea.

The city of ANGRA, capital of the Azores, in the Island of *Terceira*, is in latitude $38^{\circ} 42'$ North, and $27^{\circ} 10'$ west longitude. The island is of a moderate height; and the bay or road of Angra is easily known by *Mount Brazil*, which is a forked hill close to the sea; you perceive at the same time two steep islets called *Goats islands*, about $1\frac{1}{2}$ league to the eastward of the mount: and about 2 miles to the S. E. of the islets are 4 rocks above water, called *los Frailes*, with breakers near them.

As soon as you have made Mount Brazil, coming from the S. W.—South, or S. E. you shape your course toward it. If the wind is against you when you approach the land you can tack boldly without the bay, there being a great depth of water all over, and close to the shore. You ought however to be always careful of a calm, as the currents are there very strong, and always shifting. If in coming from the S. W. toward the mount, you

* All the compilers of voyages tell us that at the time of the discovery, about 1460, in Corvo was found the statue made of burnt clay of a man on horseback with a cloak on, but no covering on his head; his left hand on the horse's main, his right pointing to the West. There were some letters carved on the lower rock, but not understood; it seemed to point out America.

should

should not have a leading wind, you must avoid approaching too near that part of the shore that extends from the mount to the westernmost point of the island. It is an iron coast, on which, if driven by a calm, you would be in the most perilous situation.

Ships coming from the North must take great care of the south point of *Porto Praya*, at whose extremity, 2 or 3 fathoms under water, stretches toward the East and E. N. E. a rocky bank about 2 leagues extent: you may give a good birth to the east point of the island, very near which is a small islet. When you enter from that quarter you first make los Frailes, already mentioned, and Goats islands to their N. W.; the largest ships could pass between Goats islands, and the main island, there being 15 fathoms all over, sandy ground; they might even anchor there in case of necessity. You find 24 fathoms between the two Goats islands, but in no case whatever, this passage, which is only one cable's length wide, ought to be attempted. The channel between them and los Frayles ought always to be preferred, it is 2 miles broad, with 90 fathoms water, and no danger. You might likewise pass to the southward of los Frayles, without the whole island, but taking notice that a musket shot to the southward of those islets, there lies a rock under water.

The Bay of Angra is not more than $\frac{1}{2}$ a mile broad, and has not perhaps 3 cables' length of good ground, all the rest being rocky; you must absolutely moor there with 4 anchors, and always nearer the west coast, which is to the northward of Fort St. Anthony, than the coast about Fort St. Sebastian. It is open to all winds from the S. S. W. by the South, to the East: the S. W. sea which comes round the Mount, is dreadful. It is high water there at 11 o'clock and 3 quarters; the sea rises, according to the wind, from 4 to 6, but never exceeds 8 feet. The flood sets to the N. W. and the ebb to the S. E. you can remain with safety in this road during the months of June, July, August, and September, when light winds are blowing from West to N. W. but as soon as the winter begins, the winds from the offing rage with such a force, that the only resource, as you have no shelter whatever hereabouts, is to put to sea on the least appearance of bad weather.

All kind of provisions are in great plenty and very cheap at Angra.

To the northward of the east point of Terceira is the Bay of *Porto Praya*, the largest and safest in the islands, and where a whole fleet might anchor in 24 fathoms, good sandy ground.

St. Michael's Island lies to the south-westward of Terceira, in $38^{\circ} 0'$ latitude North, whence it may extend as far as $37^{\circ} 40'$. The longitude is between $25^{\circ} 20'$ and $25^{\circ} 49'$ West of London.

The northernmost part of *St. Mary's* island is in latitude $37^{\circ} 10'$, whence it may extend to $36^{\circ} 57'$. Its longitude may begin at $25^{\circ} 1'$ and terminate at $25^{\circ} 9'$. On the south shore, the French astronomers descried a town, with several ships at anchor, whose latitude is $36^{\circ} 59' \frac{1}{2}$ and the longitude $25^{\circ} 6' \frac{1}{2}$.

No

No notice is taken in the account of these astronomers of the two small islands of *Graciosa* and *St. George* (to the westward of *Terceira*), which they did not see; and though we omit them likewise, it will not be improper to mention here a volcanic island which came out of the sea the 31st of December 1719, 12 $\frac{1}{2}$ leagues from *St. Anthony's* point in *St. Michael's* island, and disappeared the 17th of November 1723. This island had emerged before in 1628, and 80 fathoms water were found on the spot which it occupied.

Between *St. Mary* and *St. Michael* is an extensive shoal called *the Formigas*; it stretches 3 leagues from North to South, and is one league broad, being formed by 7 or 8 islets, the largest of which takes up the south part; but the highest, which is pretty much like a ship under sail, whose hull is not seen, is situated about the third of the length, by the North. The rocks of the south part are not so high, and between the islets and the rocks are breakers. They say there is a channel between the south of the *Formigas* and the north point of *St. Mary*, coming nearer the former than the island; but it is not advisable to attempt that passage: the safe channel is between the east point of *St. Michael* and the north rocks; it is 5 leagues broad, and free from danger.

When the Isles of *Corvo* and *Flores* were discovered, in 1460, as has been already said, it is pretended that the magnetic needle had no variation at these islands. This observation made the Portuguese fix there their First Meridian: which has been since removed to the *Peak of the Azores* situate on the south-west point of *Pico* island. From this era the variation has increased several degrees to the West; in 1769 *M. de Fleurieu*, in the French ship *Isis*, found it 15° 36' West.

In 1764 it was observed by his Majesty's ships *Weymouth* and *Panther* amongst these islands and in *Fayal* road 13° 34' West*, so that a ship, says *Mr. Nicholson*, in the latitude of *Fayal*, observing the variation to be under 13° 30' West, might have been sure she was to the westward of the *Azores*. About 3° to the West of *Corvo* this variation was 13° $\frac{1}{2}$, and in latitude 40° 50' North, longitude made from *Ascension* 19° 44' West, about 3° likewise to the westward of *Corvo*, it was 13° 37' West.

"Though the increase of variation near the Western islands," continues the same navigator, "was so slow, that you would run 3° of longitude to the increase of 55' or 1° variation; when you were to the northward of the same islands, and steering to the eastward, you would increase it very gradually: for example, from the last mentioned variation, latitude and longitude, you would run 18° or 19° to the eastward, before your increase should amount to 18° $\frac{1}{2}$ which you would have in latitude 49° 10' to 49° 30' North, and longitude in about 15° West of London, or 8° $\frac{1}{2}$ from *Scilly*; which shews that the variation increased very gradually, or at the rate of 4 $\frac{1}{2}$ of longitude to 1° $\frac{1}{2}$ of variation."

* *M. De Fleurieu* found it in 1769 near *Pico* 13° and 13° 19'.

Before we proceed farther on these interesting observations of the variation, some account must be given of the *VIGIAS* (*Look-out*) or *Dangers* which are, or supposed to be, scattered in that part of the Ethiopic and Atlantic Oceans of which we are treating. The greatest number of these dangers seems to be in the vicinity of the Azores.

To the eastward of St. Mary, about 82 leagues, a *Rock* is said to lie in $36^{\circ} 54'$ latitude North. Another at 92 leagues to the N. N. E. of the north point of St. Michael; and in the same direction, 18 or 20 leagues from that point, the Portuguese pilots add a third danger, which might be the same with this.

To the S. W. of the Isles of Corvo and Flores, is placed the *Azores Rock* or *Shoal*. The Charts agree pretty well as to its latitude, in which however they vary from $37^{\circ} 50'$ $38^{\circ} 20'$, and according to the Terceira pilots it must be only in $37^{\circ} 30'$: but they differ strangely in the longitude; and if a mean is taken between the several accounts this rock should lie in $33^{\circ} 55'$ West of London.

Almost under the Tropic, and about $32^{\circ} 33'$ West of London, M. *De Fleurieu* in his Chart of the Atlantic Ocean inserts a *Rock* or *vigia* seen in 1764, and of which no notice is taken in the critical enumeration of these dangers given in the voyage of Messrs. *Verdun de la Crenne*, *Borda*, and *Pingré*, 1777.

To the S. W. of Brava, the Dutch as well as the French Charts lay down a *Rock* or shoal which, according to M. *D'Après*, or rather captain *Dubreuil*, the supposed discoverer, must be 95 leagues from Brava, in $14^{\circ} 50'$ latitude North. The chart of *Van Keulen* places it under the name of *Abrolhos*, only 85 leagues W. by S. from Brava.

There is a suspicion, says M. *D'Après* of certain shoals to the southward of the Equinoctial Line, as well about the tracks navigators follow in their course to Brazil, as those they injudiciously keep in their return from the Indies. Take here what the journals relate on this subject.

On the 5th of February 1754, the people on-board the ship *Le Silhouette*, commanded by M. *Pintault*, felt a shock, or violent agitation, as if the vessel had touched upon a shoal; it was then about five P. M. and according to the latitude taken by that very day's observation, this dangerous spot should be $20'$ to the southward of the Line, and in about $20^{\circ} 45'$ west longitude from London, according to their reckoning, which they traced upon the French chart, from the road of Praya in the isle of St. Jago.

On the 13th of April, 1758, the frigate *La Fidele*, M. *Le Houx* commander, felt also the like shocks in $20'$ south latitude and $20^{\circ} 55'$ west longitude.

On the 3d of May 1761, *Le Vaillant*, captain *Bouvet*, about 1 P. M. saw a small sandy island which bore N. by E. The latitude by the reckoning at noon was about $23'$ South, and their longitude, reckoned from the sight of Ferro island, which they had made the 8th of April, was about $19^{\circ} 5'$.

On the 17th of October the ship *Le Prince*, captain *Beaubriant*, in her passage to India, felt one or two shocks as if she had struck upon a shelf. She was at that time in latitude $1^{\circ} 35'$ South, and about $17^{\circ} 45'$ longitude, reckoned from the light they had of isle Brava.

Let us now return to Mr. *Nichelson's* observations on the variation, &c.

The variation, says that gentleman, has a quicker increase as you come nearer the British Channel, and will be found as follows, viz.

Between $19^{\circ} \frac{1}{2}$ to $19^{\circ} \frac{1}{2}$ West, from latitude $49^{\circ} 20'$ to $49^{\circ} 30'$ North, which is the proper parallel to steer to the eastward for the Channel, and in $10^{\circ} \frac{1}{2}$ west longitude from London: soundings 95 or 100 fathoms, fine gray sand; 46 or 50 leagues to the westward of the Scilly islands.

$19^{\circ} 51'$ West, in latitude $49^{\circ} 25'$ North, and longitude $9^{\circ} 38'$ West from London—82 fathoms, gravel and pebble-stones; 38 or 40 leagues to the westward of Scilly.

$20^{\circ} 7'$ West, from 49° to $49^{\circ} 25'$ north latitude, and $8^{\circ} \frac{1}{2}$ west longitude from London—75 fathoms, coarse white sand, like oatmeal, with some pieces of shells; 20 leagues to the westward of Scilly.

$20^{\circ} 30'$ West, in latitude $49^{\circ} 10'$ to $49^{\circ} 25'$ North; Scilly bearing N. N. E. distant 12 or 13 leagues—68 fathoms, fine white sand, with some small pieces of shells.—In latitude $49^{\circ} \frac{1}{2}$ North, 65 fathoms, white sand, with broken shells, Scilly bearing North, distance about 9 leagues.

21° West, in latitude $49^{\circ} 23'$ North—60 fathoms, coarse brown sand; 8 leagues to the eastward of Scilly and W. S W. $\frac{1}{4}$ S. 34 leagues from the Start point; the Lizard bearing N. 47° E. distant 17 leagues.

$21^{\circ} 2'$ West, in latitude $49^{\circ} 37'$ North—52 fathoms, gravel-stones and small shells; the Lizard bearing N. W. by N. 8 or 9 leagues, and the Start E. 36° N. distance 17 leagues.

$20^{\circ} 6'$ West, in latitude $49^{\circ} 53'$ North—45 fathoms, broken shells, with some stones; the Start point bearing E. N. E. $\frac{1}{2}$ N. distance seen from the deck, 9 or 10 leagues.

$20^{\circ} 6'$ West, the Start point E. N. E. the entrance of Plymouth Sound N. by E. The Eddystone N. by W. $\frac{1}{4}$ W. 3 or 4 leagues off, and distance off shore about 6 leagues—45 fathoms, fine white sand.

$19^{\circ} 20'$ West, the high land of St. Alban's N. E. $\frac{1}{2}$ E. distance 7 or 8 leagues—34 fathoms, coarse white sand, with gravel-stones.

These observations were made in July, 1764; they prove the gradual increase of the variation, coming into the British Channel, where the highest was found off the Lizard; they shew likewise, that this variation decreases as you run farther up.

In respect to the soundings the variety is so great that you can trust very little to them, as you seldom have two casts of the lead alike; the soundings only are to be depended

depended on, with this general rule; that to the southward of the parallel of Ushant, toward it and on the Coast of France, the depth of water is greater, and the soundings coarser than on the English coast, being mostly gravel, with pebble stones; if any sand it will be very coarse: whereas on the English coast, toward Scilly, 20 leagues to the westward, 9 or 10 to the southward, and 15 to the eastward of those islands, the soundings are white, gray, or brown sand, sometimes mixed broken shells and hake's teeth. In the parallels of latitude between $49^{\circ} 20'$ and $49^{\circ} 30'$ North, you will find in general fine white gray sand, sometimes brown sand.

These parallels are those in which you are to steer to the eastward, for the entrance of the Channel, as we have said before, when within them your variation is increased to 19° or $19\frac{1}{2}$ West (so said in 1764) you will have 95 or 100 fathoms water, 46 or 50 leagues to the westward of Scilly. Following the same course till you shoalen your water to 65 fathoms, you may be sure Scilly bears * North of you about 9 leagues; and when (always in the parallels from $49^{\circ} 20'$ to $49^{\circ} 30'$) you have reduced your soundings to 55 fathoms water, you may then safely steer N. E. by E. to make THE LIZARD, and having sailed 3 or 4 leagues you will see that cape bearing about N. N. E. 7 or 8 leagues distant.

"I would recommend it as a general rule," continues Mr. *Nichelson*, "for all ships coming into the Channel, to make the land about the Lizard, it being the properest place for a land-fall; and then if thick, hazy, or bad weather comes on, you know where you are, and what course to steer. I have known ships by neglect of making the Lizard, run up the channel a great way without seeing the land; they then met with hazy and bad weather, which has exposed them to great danger; and not able to make the land on account of the weather, they have been much puzzled to know how far they had got up the Channel, nor have they been certain which side they were upon. In this state of fear and confusion, I have known a ship steer a course, to avoid the dangers on the Coast of England, which ran her ashore on the Coast of France, where she was lost. Whereas had she made the Lizard, she would have had a short departure, and could have determined with precision where she was when so taken in bad and hazy weather.

* It cannot be amiss to remark here, that in the parallel of Scilly, the currents are setting to the North, and grow stronger as you come nearer these islands. It has been found by accurate observations, that in these parts the tides run 9 hours from N. W. to N. E. that is to say, when it is half-ebb at Scilly the currents begin to set to the N. W. till the beginning of the flood, when they set to the northward till half-flood; then they are setting to the N. E. till high water, when the tide runs back toward the South. This is to be understood of an ordinary weather, for when the wind blows strong from the N. E. quarter, the currents will set above 10 hours to the northward; and it is the same as far as the Land's End. Several vessels, not having duly attended to these circumstances, have found themselves in the Bristol instead of the British Channel.

In navigation short departures are certainly the best; but they become absolutely necessary in narrow seas like the British Channel: and as Lights are placed on the Lizard, a ship may with great safety make it in the night as well as the day. The point itself is a bold land, steep to, and the light-houses stand so high that they can be seen at a great distance.

The Lizard bearing from N. by W. to N. by E. distance 3 leagues, you will have 45 fathoms water, coarse gravel, stones and shells, and pieces of slate: when it bears North, about 2 leagues, you have 45 fathoms, pebble-stones, and scollop shells; which shews there is no danger in running for this head-land, night or day.

Those who are desirous of being well acquainted with the Channel, ought to keep their lead constantly going, when the wind and weather permit, and frequently to set the bearings off the land, at least every two hours, taking care to note them down in their log-books. By this they will have a surer knowledge of the soundings off all the head-lands, as well as the coast between them, at different distances from the land; then they will not be at a loss to know where they are in hazy weather, or the night-time.

"I have been informed by persons of undoubted veracity," concludes the able man to whom this work owes so much, "that they have known those, who having been entrusted with the command of a ship of great consequence, have steered their course up the Channel by the draught of the Channel, without allowing the variation*. By this they have naturally run into great danger, and narrowly escaped being lost."

In respect to the allowances to be made for the variation, coming into the Channel; you cannot allow less than two points (1764) West, from 20 leagues to the westward of Scilly, and as far to the eastward of the Lizard.

* If the degrees of latitude were expressed in the Draught, it shews a very great ignorance, and at which we wonder as much as Mr. *Nicholson*; but there are some Draughts in which no graduation being inserted, the coasts, sands, &c. as well as the Rhumb lines, are drawn according to the magnetic Meridian; and this, when not plainly expressed, may occasion dangerous mistakes.

F I N I S.

Appendix.

1797.

A particular Account of several New Tracks and Discoveries, since the Publication of the preceding Work.

Obligingly communicated by various Commanders in the Service of the Honourable EAST INDIA COMPANY, &c.

OBSERVATIONS BY CAPTAIN THOMAS BUTLER OF THE WALPOLE, RELATIVE TO HIS PASSAGE FROM THE CAPE OF GOOD-HOPE TO CHINA, ROUND NEW HOLLAND, IN 1794.

THE *Walpole* not leaving the Cape of Good Hope till the 21st of September, and remaining with convoy until the 7th October, then in latitude $39^{\circ} 5'$ South, and longitude $61^{\circ} 42'$ East, I resolved upon making my way to China round New Holland, being of opinion, as the season was far advanced, I should by so doing get to China sooner than by any other passage. The want of correct charts on board, and of accurate information respecting the track I intended going, occasioned me to pay the utmost attention to all the observations I made; possessed of a good chronometer made by *Arnold* (No. 64), having great dependance on my instrument, and losing no opportunity of ascertaining our precise situation each noon by meridional double altitudes and lunar observations, day and night, I am in hopes that navigators sailing in my track, will find in it but few errors. The ship's place, every day at noon, I have noted in the last-published chart of the Indian and Pacific Oceans, printed on two large sheets*.—After parting with the convoy, we ran gradually to the southward, and had fresh breezes most of our passage to New Holland; nothing particular occurred, except sudden shifts of the wind, sometimes in very hard squalls, in one of which the wind in an instant shifted from N. N. E. to S. W. we found these sudden squalls very dangerous when under a press of sail. The variation (the weather permitting an obser-

* See the Complete East India Pilot, Vol. I. page 34, and the Country Trade Pilot, page 1.

vation) will be found very useful in running to the eastward, because it changes very quickly, and after you pass the longitude of 130° East, you will find the variation easterly, which increases to about 6° off the S. W. Cape of New Holland: which we saw on the 31st of October at day-light in the morning, and ran in shore to make the Mew Stone, the longitude of which being particularly laid down by Captain Cook, I took that opportunity of examining my chronometer, and stood off shore again.

On the 15th of November I made Norfolk Island, and again had an opportunity of examining my chronometer. From Norfolk Island we made nearly a N. 13° E. course, and at 8 A. M. on the 17th November, saw an island from the mast-head, which we hauled up to weather; but on our nearer approach, seeing the passage to leeward of it clear, bore up, and passed to the westward of it within 3 or 4 miles. The island is in many parts, and particularly at the top, covered with brush-wood, is very steep, and apparently inaccessible, and the greatest quantity of birds about it I ever saw. At noon we had a good observation, and were then nearly abreast the southernmost part of the island, which I make in latitude $22^{\circ} 40'$ South, and longitude $169^{\circ} 15'$ East. This island being nearly in the latitude of the Isle of Pines, viz. $22^{\circ} 38'$ South, I at first supposed it might be the same, but having had several good lunar observations that morning, I found this island so far to the eastward of the Isle of Pines, as laid down by Captain Cook, viz. $167^{\circ} 38'$ East, and afterwards running to the westward of it, without seeing New Caledonia (the S. E. part of which, viz. Queen Charlotte's Foreland lies in latitude $22^{\circ} 15'$ South, longitude $167^{\circ} 12' 45''$ East; Botany Isle in $22^{\circ} 26' \frac{1}{2}$ South, and longitude $167^{\circ} 16' \frac{1}{2}$ East), or the small islands, laid down by Captain Cook, between it and the Isle of Pines, convinced me to the contrary, for we could not have passed to the westward of that island, without seeing New Caledonia, or the isles off the N. E. point, more especially as the day was very clear. From these circumstances I concluded this island to be a new discovery, and as such named it WALPOLE'S ISLAND, in my chart of this passage. This island cannot be seen from the mast-head at a greater distance than 7 or 8 leagues in the clearest weather.

At 1 P. M. thinking it a good passage, bore away intending to pass between New Caledonia and the New Hebrides, and to the eastward of Santa Cruz, or the isles called Queen Charlotte's isles; at $\frac{3}{4}$ past 4, having lost sight of Walpole Island about an hour, the people looking out saw breakers nearly ahead; immediately hauled close to the wind, and saw them from the poop, breaking in seven different places; the center one the highest, breaking as high as the main-top; I supposed them to extend near 4 or 5 miles, and place them down in latitude $22^{\circ} 06'$ South, longitude $169^{\circ} 02'$ East, and believing this also to be a new discovery, I name it DURAND'S REEF. The alarming appearance of these breakers determined me still to keep to the eastward till I was clear of the New Hebrides. At 11 A. M. on the 18th of November, saw the island

of *Annatom*, bearing about East 9 or 10 leagues, and at 1 P. M. on the 19th, saw *Tanna*, which would have been seen before, but the weather was very hazy. At $\frac{1}{2}$ past 4 we were within 3 leagues of it, but not being able to weather it, tacked and stood to the S. E. until 2 A. M. when we wore and lay up N. N. E. and in the morning were enabled to weather *Tanna* and the small island of *Inmer*. On the East point of *Tanna* is a large volcano. I found at noon by my observations and chronometer, that in these 24 hours we had had a strong set to the westward. On the 20th at 1 P. M. saw the island of *Erronan*, which we passed to the westward.

Concerning these islands which were discovered by Captain *Cook*, it will be needless to add any thing, but that the latitudes and longitudes of them, as laid down in the requisite tables, exactly correspond with my observations, both lunar and by chronometer. On the 22d of November, being to the northward of the New Hebrides, *viz.* in latitude $11^{\circ} 41'$ South, bore away N. N. W. and from the latitude of 9° South, we had chiefly variable winds and calms till we crossed the line. The wind hung chiefly from the N. E. when any thing of a breeze, and after crossing the line in longitude $166^{\circ} \frac{1}{2}$ East, I found the wind prevailed still to the N. Eastward, and having strong westerly sets, I kept as much as possible to the eastward (without being close to the wind) for several days. At day-light on the 13th of December, in about 11° North latitude, supposing the ship to the northward of all the *Caroline Islands*, bore away N. W. At 10 A. M. the man at the mast-head saw land, bearing W. N. W. to S. W. by S. At $\frac{1}{2}$ past 10 saw from the mizen-top four very low islands, with a white sandy beach, bearing from S. W. by S. to W. by N. About 4 leagues distant, the southernmost island the longest, at the same time saw the highest from the poop, bearing about S. W. by W. At 11 the officer at the mast-head saw another island to the northward, bearing N. W. by N. at this time from the poop the extremes of the island were W. $\frac{1}{2}$ N. and S. W. distant off the nearest about 4 leagues. Not finding these islands laid down in any chart, I suppose them a new discovery, and as such name them *BROWN'S RANGE*, in compliment to Mr. Browne, chief supercargo at Canton. The northernmost I call *ARTHUR'S*, and the southernmost *PARRY'S*. I had very good lunar observations while in sight of them, and place them down as follows: *Arthur's Island* latitude $11^{\circ} 43'$ North, and longitude $162^{\circ} 42'$ East, and *Parry's Island* latitude $11^{\circ} 19'$ North, and longitude $162^{\circ} 52'$ East. The discovery of these islands made me keep more to the northward than I otherwise intended to have done. I now gradually bore away to the westward, and on the 21st of December, the weather being clear, at 1 A. M. made the island of *Saypan*, and passed it to the northward within 5 miles; kept a good look-out in the night for a small island laid down in the charts to the northward of *Saypan*, called *Paxaros*, or *Farellones*, but which we saw nothing of. At day-light saw *Tinian* in the S. E. from the mast-head, about 12 leagues off. On the 30th December made the

South part of the island of Formosa, and passed between it and the Rock Vela-rete, the distance of which from Formosa is not more than 13 or 14 miles; but I think the passage a very safe one in the day time, as we saw the Rock Vela-rete very distinctly. After passing Formosa I kept well to the northward, as we found a strong current drifting to the southward, and on the 1st January 5 P. M. anchored in Macao Roads.

N. B. It may not be improper to add that off Pedra Branca we got a pilot as usual, who brought on board several certificates, affirming he was well acquainted with the different passages. In the middle of the night (when surrounded by a number of islands) we found he had lost himself, and were obliged in consequence to take charge of the ship from him; those certificates must have been purchased of some other pilots. This I mention to guard other commanders against the like imposition.

Description of the TRACK of the ROYAL ADMIRAL, Captain HENRY BOND, in 1792 and 1793, from the CAPE to PORT JACKSON and CHINA. With an Account of the REEF off the N. W. End of NEW CALEDONIA.

Extracted from his Journal.

I WAS on the look-out for this Reef, as Captain *Cook's* account of seeing no end to the breakers alarmed me, and hauled a degree to the westward to give it a good birth, keeping a good look-out. At day-light we discovered to the eastward two small islands, about 4 leagues to windward, and presently after detached lumps of breakers, here and there straggling rocks above the water; stretching away to the N. W. bore up and ran along the Reef about 5 miles distant: at 7 we could plainly see a long, low, woody island about 4 leagues to the eastward of the breakers: at 8 we were abreast the N. W. extreme, over which the sea broke furiously; the Point being open and exposed to the easterly swell, it appeared from the Point to be of considerable breadth, and seems made up of islets, rocks, &c. Above and under water there may possibly be clear passages through, but necessity would scarcely warrant so rash an undertaking. It is the most dangerous shoal I ever beheld, and the water so very smooth, owing, no doubt, to its eastern extent, that a ship might be on the Reef presently, and almost with the best look-out. I have ascertained the longitude of its N. W. point by a very good *Arnold's* time-keeper, whose rate agrees with our lunar observations as nearly as possible; its

N. W. extreme lies in latitude $18^{\circ} 04'$ South, longitude $162^{\circ} 43'$ East of Greenwich. I have no doubt that it extends to the N. W. point of New Caledonia. From the mast-head the extremes of the shoal from S. E. by E $\frac{1}{2}$ E. to N. $\frac{1}{2}$ E. the N. W. end formed a point; the breakers appeared from thence to run considerably to the eastward, the southernmost island E. S. E. the northernmost N. E. by N. in extent from N. N. E. $\frac{1}{2}$ E. to N. E. var. $9^{\circ} 53'$ East.

NEW DISCOVERED ISLANDS.

SATURDAY, December 15, 1792, at 2 P. M. saw two islands from N. by W. to N. N. E. $\frac{1}{2}$ E. Finding we could not weather them, bore up and passed them to the eastward, about 6 miles distant: they are both very low, and covered with trees; amongst which the cocoanut-tree was very conspicuous; they appeared circular and of no great extent, they seemed joined by a Reef. None of our eastern charts having them down, I take them to be a new discovery, and have named them accordingly **BARING'S ISLES**, in honour of Mr. Baring, the present chairman of the honourable court of India directors. It was rather unlucky that the sun was not visible the whole day, but the latitude and longitude I have laid them down in are sufficiently correct, either to find or avoid them, latitude $5^{\circ} 35'$ North, longitude $168^{\circ} 13'$ East, var. 10° East.

Sunday, December 16, 1792, at 10 P. M. it growing very thick and blowing hard, brought to with her head to the westward. At 11 the people on the look-out saw a fire on the lee-bow, bearing N. W. by N. wore immediately, saw the land very distinctly in veering about 3 or 4 miles distant; made Sail, and stood off to the southward. At $\frac{1}{2}$ past 3 A. M. wore and stood in for the land; at day-light saw the land, bearing N. W. by W. finding we should lose time in attempting to weather it, bore up and ranged along the eastern coast of above twenty small islands lying nearly S. by E. and N. by W. by compass they appeared all connected by reefs and ledges, distant from each other from one mile to six; they are well covered with trees and full of inhabitants. We distinguished them very numerous on the sandy beach; they are very low and dangerous; a ship in thick weather might run on the Reef without seeing land on either side. I was at first inclined to think these islands were seen by the Scarborough in her passage to Canton, notwithstanding the difference of four degrees of longitude, which, from the course we steered after leaving them, and not seeing the other islands to the N. N. W. makes it impossible; so we are, no doubt, the first discoverers. I have named them the **MUSKILLO GROUPE**, latitude $7^{\circ} 20'$ a $7^{\circ} 47'$ North, longitude $168^{\circ} 23'$ Eastern side. Var. $10^{\circ} 00'$ East.

Connected

Connected Situation of the Islands *TOBACO SIMA*, and S. E. Extreme of *FORMOSA*.

MONDAY, January 7, 1793, at $\frac{1}{2}$ past 5 A. M. saw *Tobaco Sima*, and at noon observed in latitude $21^{\circ} 57'$ the mean of three good observations, the southernmost point bearing E. $\frac{1}{2}$ N. and *Little Tobol* East. All the charts place this island due East from *Tobaco Sima*; its true position is S. S. E. distant about 2 miles, and in some charts they are placed too far north. Their true situations are, *Tobaco Sima*, latitude $22^{\circ} 00'$ longitude $121^{\circ} 48'$ East, and *Little Tobol* $21^{\circ} 57'$ North, distant from the S. E. Point of *Formosa*, at least 15 leagues. This point is also placed erroneously; I make its situation determined by a good chronometer, whose rate was well ascertained, and by a good meridian altitude for latitude as follows: latitude $21^{\circ} 54'$ North, longitude 121° East. *Vela-rete* lays S. by W. from the S. E. Point 4, or at most 5 leagues; its latitude $21^{\circ} 40'$ North, longitude $120^{\circ} 58'$ East.

Account of a Shoal supposed to be dangerous to the Southward of *MADAGASCAR*, lately communicated by Captain BOND.

ITS latitude is $31^{\circ} 44'$ South, discovered by a Dutch officer who founded on it in 24 fathoms, when attempting a passage to the *Mauritius* with dispatches; and afterwards captured by the Royal Admiral in October 1795. He assured me he had several good casts, the sea running very high and confused. From the mast-head to the northward appeared shoaler water and breakers, on which he stood to the southward, and had no ground with 60 fathoms in less than 15 minutes, the vessel going about 3 knots. The latitude may be depended upon $31^{\circ} 44'$ South, longitude per estimation about 44° East.

EXPLANATORY

**EXPLANATORY DIRECTIONS FOR THE SOUTH CHANNEL,
FROM PRINCE OF WALES'S ISLAND TO SEA.**

Communicated by Captain HOME POPHAM, to which are added the Testimonies of various Commanders, &c. respecting the utility of that Survey *.

"REMARKS on the situation of the different Buoys †, which are numbered in rotation according to their distances from the fort.

Praya Buoy,	No. 1, in 9 feet,	Black,
North Buoy, on the Long Sand,	2, 3 $\frac{1}{2}$ fathom,	Red,
Middle Buoy, on the Long Sand,	3, 3 ditto,	Ditto,
Buoy of the Middle Ground,	4, 3 ditto,	White,
Jeraga or South Buoy of the Long Sand,	5, 3 $\frac{1}{2}$ ditto,	Red,
South Buoy, Praya Sand,	6, 8, feet,	Black,
Mud Flat Buoy,	7, 3 $\frac{1}{2}$ fathom,	Ditto.

"PRAYA SAND, on whose northern pitch the Praya Buoy stands, is the most, indeed the only dangerous spot in the New Channel—it shoalens so suddenly, that a ship should never stand nearer to it, in working out or in, than a cable's length; and about that distance west of it there is ten fathoms, which is the deepest water I found in standing across from the Praya Sand to the Long Sand; the Channel between these two Sands being about three quarters of a mile wide."

"No. 1, The Buoy of Praya bears from the flag staff at the fort S. 15° E. distance 4,600 yards—although I mention the distance in yards, I beg it may not be supposed that this distance was calculated from a fundamental base line, for as I had only a few days to examine this channel, I could not spare half the time to measure a base on the Praya shore; I therefore contented myself in using the distance from the fort to Poolo Jeraga as a base, whenever I could see any of the Buoys from each end of it, I also measured the bar which I likewise used; and determined the distance of some of the Buoys by

* See the second volume of the Complete East India Pilot, page 78.

† Beacons were placed when the channel was first surveyed, as Mr. Light thought the Malays might weigh the Buoys for the sake of the Chains; but on my going to the island in 1792, I had Buoys made 9 feet by 6, and placed them, and this year I carried through this channel the company's ships, *Ocean*, *Nottingham*, *Sir Edward Hughes*, *Lord Macartney*, and *Bridgewater*, besides many country ships; amongst which were the *Canon*, one of the largest ships belonging to Bombay, and the *Daphne*, originally an Indian man, but sold out of the service.

report

report from the guns of the fort—the respective distances are therefore set down by the mean of what I esteemed the best admeasurement.”

“ No. 2, or North Buoy of the LONG SAND:—I placed this Buoy, as a guide to vessels, not to borrow too near the Long Sand, which commences about 1,800 yards south of the Fort Point, and runs within a mile of the north Point of Jeraga, when it either terminates upon a Mud Flat, or the tides from the two channels have forced a certain quantity of mud upon its south end. This Sand according to Mr. Light’s general chart (from which I borrowed the distance of Jeraga from the fort), is about 1,300 yards wide, on its widest part—there are several hollows or small bights on the east side of the Sand, therefore no person will I hope attempt to cross the northern Buoy with a vessel drawing above fifteen feet, and to make it a rule not to come within six fathoms, unless he can depend on his vessel’s working quick, in that case he may go into five fathoms.”

“ No. 3, or Middle Buoy of the LONG SAND:—this Buoy stands on the west part of the Bar, about 300 yards southward of which the Long Sand is so steep to, that you suddenly shoalen from seven to three fathoms; therefore do not go to the westward of it, till you are nearly half a mile to the southward, when the soundings become more regular.”

“ No. 4, or Buoy of the MIDDLE GROUND, bears from the fort S. 2° East, distance 6,850 yards:—this Buoy stands on the northern part of the Middle Ground, which is a narrow hard sand, running nearly S. S. E. and terminating on the south part of the Praya Sand, and these sands both end on the Kio Mud Flat. The Middle Ground is so very narrow, that you cannot get two casts of the lead in crossing it—you have no less than seventeen feet on it at low water spring tides,—in general more. When it is necessary to cross it, the Buoy of the Middle Ground, on with the northern Buoy of the Long Sand, is a mark for being on it; but it cannot be any object to cross it when you are more than half a mile to the southward of the Buoy of the Middle Ground, then the channel to the eastward becomes very narrow.”

“ No. 5, Jeraga Buoy, or South Buoy of the LONG SAND, is N. 66 East, distant 1,400 yards from the north Point of Jeraga, upon the S. E. part of the Long Sand, or N. E. part of Jeraga Flat; to the southward of it the soundings are regular and soft—and it is a mark for rounding the Flat in hauling in for the island.”

“ No. 6, South Buoy of PRAYA SAND, bears from the Buoy of the middle S. 20° East, 2,100 yards:—Come no nearer this Buoy than $3\frac{1}{2}$ fathoms, from which it shoalens suddenly to two fathoms.”

“ No. 7, Mud Flat Buoy:—This Buoy is on the KIO FLAT—it bears E. 3° North from the north end of Jeraga, distance about 3,000 yards—I placed this Buoy as a guide not to borrow too much on the Kio Flat, for although the ground is very soft, yet the soundings are irregular.”

GENERAL

GENERAL DIRECTIONS FOR GOING OUT,

By Captain HOME POPHAM.

"THE best time for a large ship to go out, is to weigh at half flood * from *Poole Pinang*, now PRINCE OF WALES'S ISLAND, hauling up for Praya Buoy to avoid the Long Sand; when a cable's length to the westward of this Buoy, steer over for the middle, and when you have six fathom, haul up to the S. W. or W. S. W. till the Buoy of the middle bears S. by E. then steer S. by W. and you cross the Bar in quarter less five fathoms—at high water you will have at least five.

"The Bar is about 380 yards in length, the Buoys lie from each other E. 14° South, and W. 14° North—on the Bar there is a Swatch, but so narrow, that it is impossible to give a good mark to hit it without a Buoy of the fairway—at low water spring tides there is eighteen feet on the shoalest part, which is nearest the Long Sand, twenty feet every where else, and in the Swatch four fathoms. The tide rises here from eight to nine feet: when you cross the Bar, you will instantly have seven fathoms: you may get two or three casts eight, and then you shoalen gradually to five and a half, which you will have between the Mud Flat Buoy and the north Point of Jeraga. As soon as the north Point of Jeraga is to the northward of you, you will deepen your water, and you may then haul in for the island—after you cross the Bar, steer south, observing to keep one of the Bar Buoys to the eastward, and the other to the westward, and in that direction you will have the most water. To the southward of the north Point of Jeraga, you deepen gradually to six and seven fathoms, which you will carry all the way out. The nearer the island, the deeper the water. The soundings in the fair channel are mud.

"I have recommended to Mr. Light to have a Buoy on the S. W. part of Kio Flat, for ships to take up the channel coming from the southward, in case he thinks *Saddle Island* an insufficient mark.

* It flows on the shore at half past twelve full and change, and in the harbour at three. The flood runs to the southward, and sets fair through the channel.

DIRECTIONS FOR SAILING FROM PULO OR POOLO LOUCAVA AND
POOLO LADDA TO POOLO PINANG, OR PRINCE OF WALES'S
ISLAND.

By Captain JOHN WRIGHT.

" IF you pass the south-west end of *Poolo Ladda*, at about 3 leagues, steer S. E. by E. and E. S. E. for the *Poolo Bountings*, until you come, if in the night, into 15 fathoms water.

" You may near the *Poolo Bountings*, of which there are four, within 2 leagues, in 15 fathoms mud; and from thence steer S. S. E. for *Poolo Pinang* harbour; but a stranger should not attempt, especially in a large ship, to enter that harbour in the night; as he may anchor any where to the northward, in what water he pleases.

" The long leading mark for entering from the northward and running into *Pinang* Harbour is, to keep the west end of *Poolo Jeraga*, or *Jerajab*, (which island lies between the south-easternmost end of *Poolo Pinang* and the Malay Coast), clear or just open to the eastward of the point on which *Fort Cornwallis* is built; this will carry you clear of all danger, the least water being a $\frac{1}{2}$ 4 fathoms mud, and mud and sand.

" Should you not see *Poolo Jeraga*, owing to hazy weather, another long leading mark is too high the *Southernmost Poolo Bouting* N. by W. until you get light of *Poolo Jeraga*.

" Close in with the north-east point of *Poolo Pinang* there is a large rock called the *Poolo Teeboufe*, with some small rocks round it; you may in turning in for *Pinang*, stand close to them, there being no danger but what is seen.

" On the 26th July, 1793, I worked into *Pinang* harbour from the northward, with a fresh breeze from the S. S. E. on the last of the flood, which sets to the southward. Tacked occasionally on the Malay shore in 8 fathoms, and on the island side in 6, 5, and a $\frac{1}{2}$ 4 fathoms, but I think the last east, viz. $\frac{1}{2}$ 4 fathoms was much too near the Mud Flat, which stretches from the north-east point of the island to very near the point on which the fort stands.

" On the coast to the northward of *Poolo Pinang*, it is high water, on full and change days, at 12 o'clock; but in *Pinang* harbour it is high water at 3 o'clock on the same days.

POOLO

POOLO BOUTON	West and East Islands lie in latitude	8° 30' 0"	} East.
	East Island lies in longitude	- - - 99° 24' 0"	
Per Captain Green	West Island	- - - 99° 15' 0"	
FORT CORNWALLIS	lies in latitude	- - - 5° 27' 0"	
	in longitude	- - - 100° 25' 15"	

Snow Grampus, 9th March, 1789, at $\frac{1}{2}$ past 4 P. M.

RAT ISLAND, when in one with the south-west end of Poolo Loucava or Poolo Ladda bore N. by W. $\frac{1}{2}$ W.

Correspondence respecting the SOUTH CHANNEL.

To ANTHONY LAMBERT, Esq.

SIR,

I AM happy to inform you, that the Governor General in Council has been pleased to allow the Chart of, and directions for the South Channel of Prince of Wales's Island to be published.

Your motive in desiring me to make the request, being obviously to facilitate the use of that channel for the benefit of vessels trading to the eastward, I trust you will allow me to present you with this, as a token of your zeal for the public good.

I have the honor to be,

Sir,

Calcutta, Dec. 27, 1791.

Your very humble Servant,

HOMER POPHAM.

I feel it incumbent on me to relate the particular circumstances which led to the ascertaining the South Channel, and publication of the Chart.

Soon after my arrival at *Prince of Wales's Island*, I observed the difficulty that ships had in working round the north end of the island, as the strong N. W. winds were then setting in; I found on enquiry that it had not been determined whether there was a safe

channel to the eastward of *Pulo Yeraga*, and I offered my service to *Mr. Light* for this purpose:—the handsome manner in which he accepted it, claims my grateful thanks, and the ready assistance he gave me on this occasion, contributed to my ultimate success, and demonstrated his ardent wish to promote the welfare of the rising colony over which he presides.

The friendly communication which this Gentleman made to the Right Honourable the Governor General in Council here, has another claim to my acknowledgments, as it has procured me testimonies of approbation far transcending the humble portion of my endeavours, and which are so flattering, as to exact from me the most ready obedience to his orders, whenever on any future occasion he may do me the honour to conceive, that my slender professional acquirements can any ways tend to promote the public service.

H. P.

TO EDWARD HAY, Esq.

Secretary to the Government.

SIR,

I HAVE the honour to acquaint you that the passage through the South Channel for ships of any draft of water, not exceeding 24 feet, is now determined by a survey performed by Mr. Popham, who will present Government with a Chart of the passage. The voluntary service this Gentleman has rendered to this settlement will, I hope, recommend him to the notice of the Honourable Board, the complaints of the loss of time in working out of this harbour to the northward when bound to the southward is now removed. Temporary beacons are placed until buoys can be procured and fixed.

I have the honour to be

Sir,

Your most obedient

humble Servant,

FRANCIS LIGHT.

Fort Cornwallis,

September 8, 1791.

To

TO HOME POPHAM, Esq.

Of his Majesty's Navy.

SIR,

1. CAPTAIN LIGHT, the Superintendant of Prince of Wales Island, having acquainted the Governor General in Council, in a letter dated the 8th of September, that the passage through the South Channel for ships of any draught of water not exceeding 14 feet has been determined by a survey which you have performed, the Board have directed me to request that you will lay before them a chart of this passage.

2. You will receive inclosed a copy of Captain Light's letter, it conveys his testimony of the assistance which you have rendered; and I have the pleasure to obey the orders of Government by signifying to you the sense they have of it: it will be noticed in proper terms, to the Honourable Court of Directors, and they will be requested to represent it to the Honourable the Lords Commissioners of the Admiralty at home.

3. The Board have observed that the present is not the only instance in which you have exerted yourself to render your professional abilities beneficial to the public in India. You assisted at the request of Government in the year 1788 in the survey of New Harbour and the Channel appertaining to it: you have now gratuitously undertaken and completed a survey in another part of India; and the result of it is likely to prove highly beneficial to the commerce of the Company, by removing the objections which precluded the commanders of their ships from touching at Prince of Wales's Island late in the season, when the strong winds from the North and North West occasioned a delay of several days in working round the North end of the island to go to the Southward; and it will also encourage ships to touch at the island on their return from China, which few were able to accomplish before the Southern Channel was ascertained.

4. It will afford me much satisfaction to attend to the instructions, which have been given me by ordering a piece of plate bearing an inscription, that shall mark the occasions upon which it is given, and presenting it to you in the name of the Governor General in Council, to prove his sense of the zeal and effect which has distinguished your endeavours to promote the public service.

I am, Sir,

Your most obedient
humble Servant,

E. HAY,

Secretary to the Government.

Council Chamber,

Nov. 4. 1791.

Extract of the Public Letter from Bengal, dated November 25, 1791, addressed to the Honourable the Court of Directors, and received per Queen, May 16, 1792.

YOU will observe in his letter dated the 8th of September, that Mr. Popham, a Lieutenant in his Majesty's Navy, has rendered a very important service to your settlement of Prince of Wales's Island and to the navigation of that part of India, by effecting a survey of the South Channel, and ascertaining, that vessels of any depth of water, not exceeding 24 feet, may now make their passage, and thus avoid a great loss of time, to which, previous to the survey, they were obliged to submit in working out of the harbour of Pulo Pinang to the Northward, when bound to the Southward. Mr. Popham has been desired to deliver to us a Chart of his Survey upon this occasion, and we shall transmit it to you, when we receive it, reserving a copy to be kept in this country.

The present instance is not the first of a liberal exertion made by Mr. Popham in the line of his profession for the service of the company in India. At the request of government he assisted in the year 1788 in the survey of New Harbour and the adjacent channel, and to the merit thus acquired he has now added that arising from the performance of a service likely to prove highly advantageous to your commercial interests.

Unemployed as Mr. Popham is under the company: his zeal and the gratuitous direction of his professional talents to the advancement of the public good, on the two occasions we have mentioned, and especially the last, claimed more than common notice, and we have accordingly expressed to him our sense of the readiness he has manifested to promote the interest of your service.

We have also directed that a piece of plate may be prepared, bearing an inscription expressive of the occasion upon which it is given, and we have instructed our secretary to present it to him in the name of the Governor General in Council.

Permit us to request that the services performed by Mr. Popham may be represented in the terms they merit by your Honourable Court to the Lords Commissioners of the Admiralty of England.

These are to certify that the foregoing are true copies of the 92d, 93d, 94th, and 95th Paragraphs of the Letter above mentioned. In witness whereof I have hereunto set my hand at the East India House in London, this 4th day of October, in the year of our Lord 1794.

W. RAMSAY, Sec.

IT

IT is much to the honour of Captain Popham, the chart he has with so much liberality and correctness made known to the public; with the assistance of it and his instructions, I shall not hesitate to take that channel either coming or going through the Straights to Penang, with such leading marks as there now are.

The Carron drew 21 feet 8 inches water, it will give me a particular satisfaction to find this passage generally adopted, and I fancy the intended buoys when laid down will leave no doubt of its being preferred on all occasions.

I have the honour to be, Sir,

Your most obedient Servant,

F. SIMPSON.

*On board the Carron,
June 29, 1792.*

*Ocean, Monday Evening,
July 15, 1792.*

DEAR SIR,

I HAVE the satisfaction to inform you, that under the charge of Captain Home Popham, I have proceeded through the South Channel, and am now fairly out. He appears to me to have surveyed this passage with accuracy, for although we had the most baffling winds possible, I was not at any time under the least apprehension; the least water in crossing the middle ground was four fathoms, and that only for one cast. Allow me also to add that I am fully persuaded I have saved several days by taking this passage from Pulo-Pinang.

I am, with regard, Sir,

Your most obedient Servant,

A. PATTON.

To Francis Light, Esq.

Hampshire, off Po Ramas, July 23, 1792.

SIR,

IN going out of the South Channel I was very much surprised to find that with a turning wind we had not less than four and a half fathoms; as I have frequently both coming in and going out to the Northward, not had more than four, and have been five or six days ere I got so far to the Southward as Saddle Island, I am well convinced that every professional man once passing to the southward would prefer it, for it is perfectly clear.

After passing the channel 7 miles and standing for the Malay shore, the Charlotte (a country ship) hailed, and said she had $4\frac{1}{2}$ fathoms; we put our helm down, and while in stays shoaled from 4 to $\frac{1}{2}$ 2, although we did not perceive the ship take the ground, it being so soft; at this time Saddle Island bore S. W. about 14 miles; we run out a hauler, and with ease hauled the ship off.

I am so much convinced of the advantages arising to ships bound to Prince of Wales's Island from the Southward, that I shall always prefer and endeavour to embrace them.

I am, Sir, with respect,

Your most obedient Servant,

To Francis Light, Esq.

JOHN REID.

DEAR SIR,

AS the commanders of the different ships trading from Bombay are highly sensible of the advantage they may derive from the Southern Channel leading from Prince of Wales's Island to Sea, which you have now fully established by carrying through all the Honourable Company's ships of this season, and most of them with a working wind; we hope you will allow us to present you, in the name of ourselves and the other commanders from that port, with a piece of plate as a testimony of our gratitude.

We are,

Dear Sir, with much esteem,

Your obliged Servants,

HENRY LAURIE,

Comm. Surat Castle.

JOHN REID,

Comm. Hampshire.

L. PHILLIPS,

Commissioner.

C. C. M'INTOSH,

Comm. Hornby.

Canton, Nov. 13, 1792.

To H. Popham, Esq.

Ship

DEAR SIR,

Ship Bridgewater, Aug. 16, 1792.

Saddle Island, N. W. by W.

I HAVE the pleasure to inform you the Bridgewater is safe out, and not a little owing to the skill and attention shewn on the part of Captain Popham; the whole of the way we had a working wind, but we at present lay up South, and hope to clear all. Pray allow me to offer you my best thanks for your civilities, and believe me very truly,

Dear Sir,

Your obliged humble Servant,

To F. Light, Esq.

GREG M. LEWIN.

SIR,

I HAVE the satisfaction to acquaint you that the Sir Edward Hughes is now clear of the South Channel and in the fair way.

I shall take the liberty to mention that in my opinion a safer channel cannot be, and that I think Captain Popham's merits on this occasion are such as to deserve the highest encomiums, and I trust the time is not far off, when he will be rewarded in the only way he would wish, by the grateful acknowledgments of those in power both at home and abroad; indeed such skill and attention as he has shewn in many former services call loudly for such a reward, as is only fit for a nation at large to bestow.

I am, Sir,

Sir E. Hughes,

Aug. 23. 11 P. M. 1792.

Your most obedient humble Servant,

ROB. ANDERSON.

To F. Light, Esq.

DEAR SIR,

WE have (at length) got out clear in the same tract we unmoored on, in spite of a combination of all the fads united against us; and any one who wants information respecting the South Channel, I shall beg leave to refer them to Captain Popham's chart, which in my opinion is clear enough to point out the channel to the meanest capacity, and I shall make it an established rule at all future times to steer for the middle of the island, and round in, on which ever side the wind seems most to favour; we never had less water than $\frac{1}{2}$ less 5 fathoms, our ship drawing 20 feet.

If we had had a pleasant working breeze we should have been out in half the time.

Excuse haste of this scrawl, and give me leave once more to offer you my best thanks for your attention, being, with respect,

Ship Daphne,

June 24, 1792.

To F. Light, Esq.

Your very obedient,

DAVID ROSS.

DEAR SIR,

I HAVE the pleasure to acquaint you the Nottingham is safe out of the Southern Channel, and the least water we had was $\frac{1}{2}$ less 5 fathoms on the crossing track. The channel I look upon to be perfectly safe, and there is hardly any time but it will expedite a passage 3 or 4 days than by going out the other way; two of my invalids whom I have been obliged to keep in the guard for some days, on being liberated this morning, no guard being with them to bring them to the boat, run from the midshipman, and are now on shore on the island. I have the honour to be,

Dear Sir,

Your most obedient Servant,

(Signed) JOHN BARFOOT.

Nottingham,

August 3, 1792, 2 P. M.

To F. Light, Esq.

DEAR SIR,

Ship Lord Macartney,

August 10, 1792.

I HAVE the pleasure to inform you that the Honourable Company's ship Lord Macartney, is safe out of the Southern Channel in three hours from the weighing of our anchors; great praise is due to Captain Popham for his exertions. I would recommend this channel to every commander as a short, safe, and easy one.

From your most obedient humble Servant,

To Francis Light, Esq.

JAMES HAY.

SIR,

I HAVE the pleasure to acquaint you that Captain Popham has carried the Carron out of the Southern or New Channel in perfect safety; we got under way with a falling tide and very baffling light winds on the dead of the Naps, and we borrowed on the Prya to large $\frac{1}{2}$ 3 for about 25 yards in length.

It is my opinion it is not only a very safe convenient channel; but also a very beneficial one to all ships that may visit Prince of Wales's Island, by the time gained over the common mode of going to the Northward.

To Francis Light, Esq.